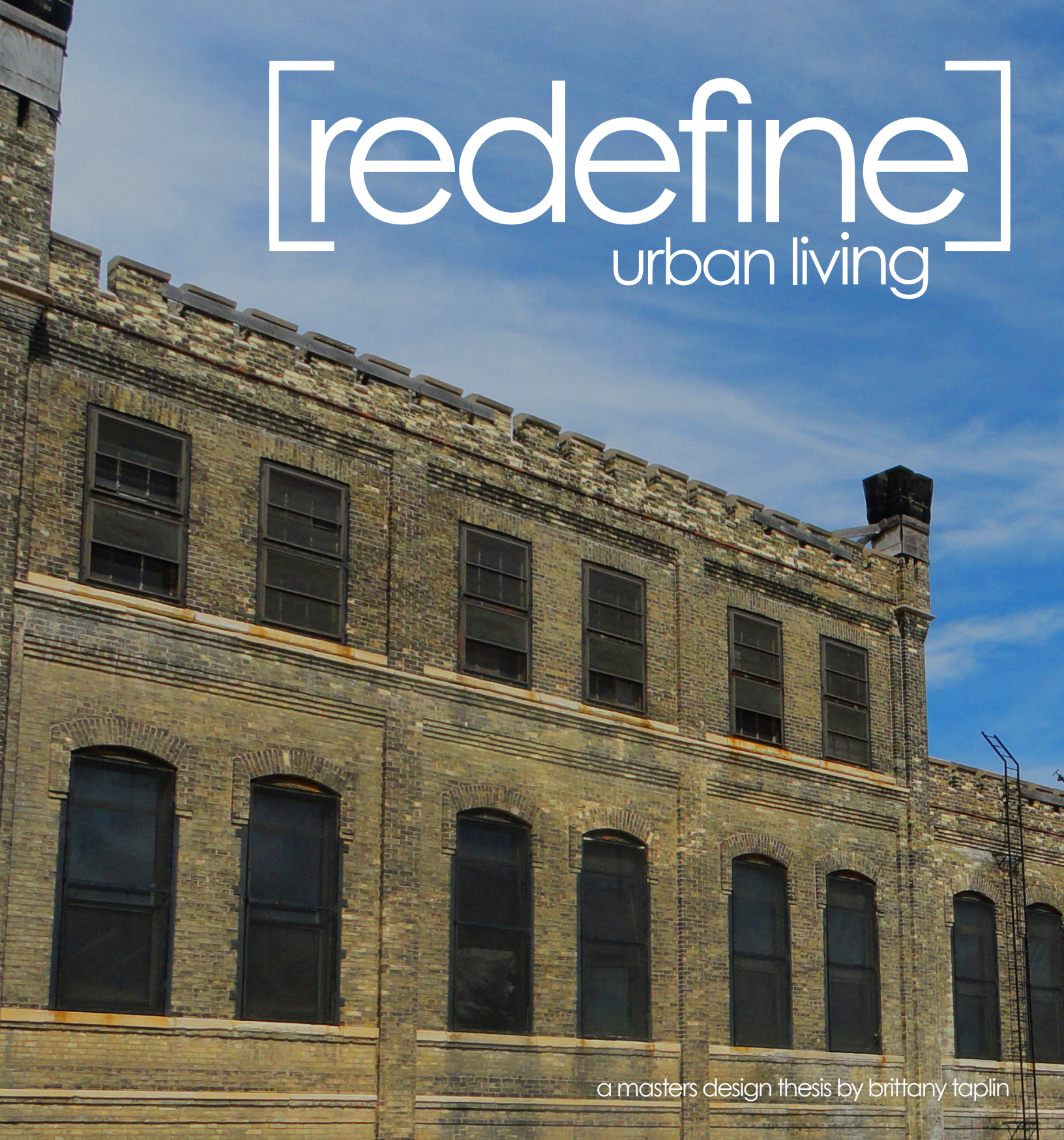

[redefine
urban living
a masters design thesis by brittany taplin

Redefine Pabst Brewery

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By Brittany Taplin

In Partial Fulfillment of the Requirement
for the Degree of
Master of Architecture

Primary Thesis Advisor

Thesis Committee Chair

May 2014
Fargo, North Dakota

Table of Contents

Tables and Figures

Abstract

The focus of this thesis, [redefine] is how a building's function can be redefined to suit the changing needs of the community through adaptive reuse.

Over time buildings cease to function the way they were originally intended. Restoring, renovating and recycling buildings are methods of redefining function. This thesis investigates the mixed use renovation of a 237,000 square foot abandoned brewery bottling building in attempt to meet the needs and wants in Milwaukee, Wisconsin.

restoring renovating mixed use
function recycling redefining

Problem Statement

How can balance between **new and existing** be achieved through **renovation?**

Statement of Intent

Project Typology

Mixed- use/Residential

Theoretical Premise/Unifying Idea

ACTOR
Designers need to think sustainably and waste less material, through renovation of unused structures. Developers and architects should recognize the value in vacant buildings, instead of tearing them down. They need to see potential for a new use within the old structure.

ACTION
The action of renovation can create a seamless connection between an old structure and new technology in the built environment.

OBJECT
The building's function can be redefined to adapt to the needs of the community.

> The Preservation Green Lab of the National Trust for Historic Preservation conducted a study which confirms new construction frequently has more negative environmental impact than building reuse.
>
> (Sifferlin, 2012)

> **"The greenest building is one that is already built,"**
>
> said Carl Elefante, director of sustainable design at Quinn Evans Architects.
>
> (Sifferlin, 2012)

Site

Pabst Brewery
Milwaukee, Wisconsin

Project Justification

Preservation, restoration and renovation are needed in our society. Less resources would be used world-wide if renovations became the norm. The concern in architecture has been about being more green and sustainable. What is more sustainable than extending the life of a building?

Proposal

Narrative

All buildings come to a point where the function is not current with the needs of the surrounding community. Adaptive reuse is ideal in this situation to reuse the building and create a new purpose. Through adaptive reuse, an old building has the potential to become new again.

During the early 1900s, there were large areas in cities throughout the United States which were all industrial. Many of these buildings used for manufacturing are now abandoned. When presented with an old industrial building, redevelopers often choose to demolish and start anew. In doing this, the history is demolished.

Adaptive reuse is a sustainable way to change the look and function of old structures while keeping the history alive. The recent advancement toward sustainable practices has pushed for creative ways to be sustainable through architecture. New gains in technology has allowed for these advancements. Old buildings can benefit from the technology and modernization. This creates an issue of how to accomplish balance between the new and the old.

The wear of time cannot be easily replicated. Buildings gain invaluable character throughout their lifetime. The Pabst Brewery holds a mass of character from the patina of the materials to the history of the brewery.

The Brewery Project encompasses all of my architectural passions into one area. Zilber had the same drive to preserve the history of old buildings while introducing new techniques and technology.

The Pabst Brewery was abandoned in 1996, and 10 years later Joseph J Zilber purchased the property. Quickly the Brewery Project became the largest public-private partnership in Milwaukee. In 2008 during the recession, development stopped due to lack of funding.

The goal of my thesis is to build off of what the Brewery Project has started and to bring new life into the Pabst Brewery Bottling Building through my design. My dedication to preserving architectural history through adaptive reuse will be put to use developing this thesis project. I will have to find a balance between adding new and taking away the old. This will present a challenge. It is a challenge I am excited to face.

Client Description

The Pabst bottling building will be a mixed use adaptive reuse project.

Client

The project will be designed for Zilber Ltd. The bottling building is currently under contract with an unnamed company (Brewery, 2007). Individual tenants will occupy space within the building. These individual tenants will be renting commercial and residential spaces.

User

Residential

The residents are the most frequent users of the building. The residents consists of the renters, pets, and guests.

Retail

The shop owners and employees will often be at the brewery complex. The public will come to the complex significantly less.

Restaurant/Bar

There will be the most users at the restaurant and bar, but they will not come as often.

Peak Usage

Shop	9:00 am until 5:00 pm
Restaurant	1:00 am until 1:00 pm
	5:00 pm until 8:00 pm
Bar	6:00 pm until 2:00 am
Apartments	5:00 pm until 7:00 am

Parking will not be an issue. On street parking and a parking ramp are available to employees, customers, and residents.

Many of the clients inhabiting the building will be between 18 and 30 years old. There is a college nearby, which will be attracted to the shops, restaurant and apartments.

Major Project Elements

The mixed use building will be divided into three typologies.

Residential

Residential spaces include:

Lobby/Entrance
Living
Cooking
Eating
Sleeping
Bathing
Storing

Restaurant/Bar

The restaurant and bar will need:

Dining area
Bar area
Kitchen
Dry Storage
Refrigeration
Shipping/Receiving

Retail

Types of retailers include:

Coffee Shop
Clothing Boutique
Gift Shop
Fitness Center
Grocery
Bakery
Pharmacy

The retail spaces needed are:

Showroom
Storage
Kitchen
Refrigeration
Shipping/Receiving
Break rooms
Bathrooms

Site - Macro

Region

The midwest region of the Unites States of America.

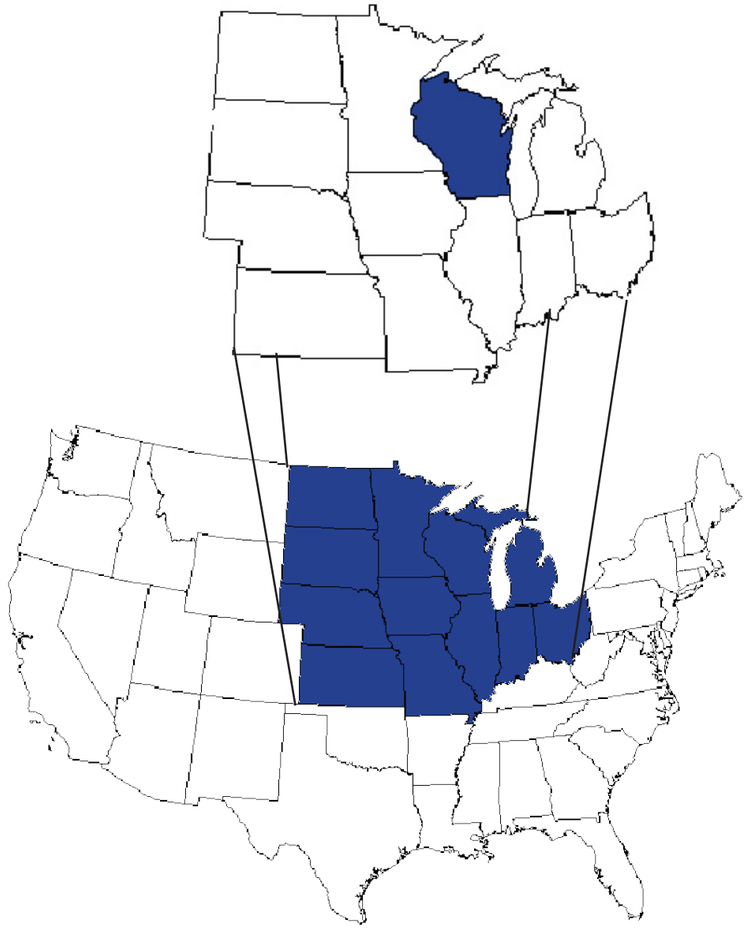


Figure 1.1

City

Milwaukee
Milwaukee County
Wisconsin

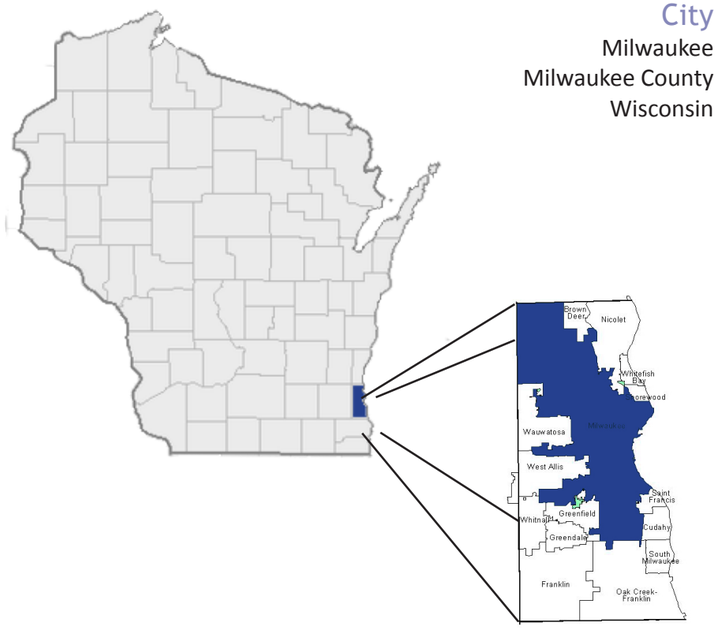


Figure 1.2

Site

Block 3 of the Pabst Brewery Complex

This site is important because of the location and the history. The location is within walking distance of downtown Milwaukee. There is a technical school nearby and residential areas north of the site. The brewery complex is going through major changes for the better and this building has yet to be designed.

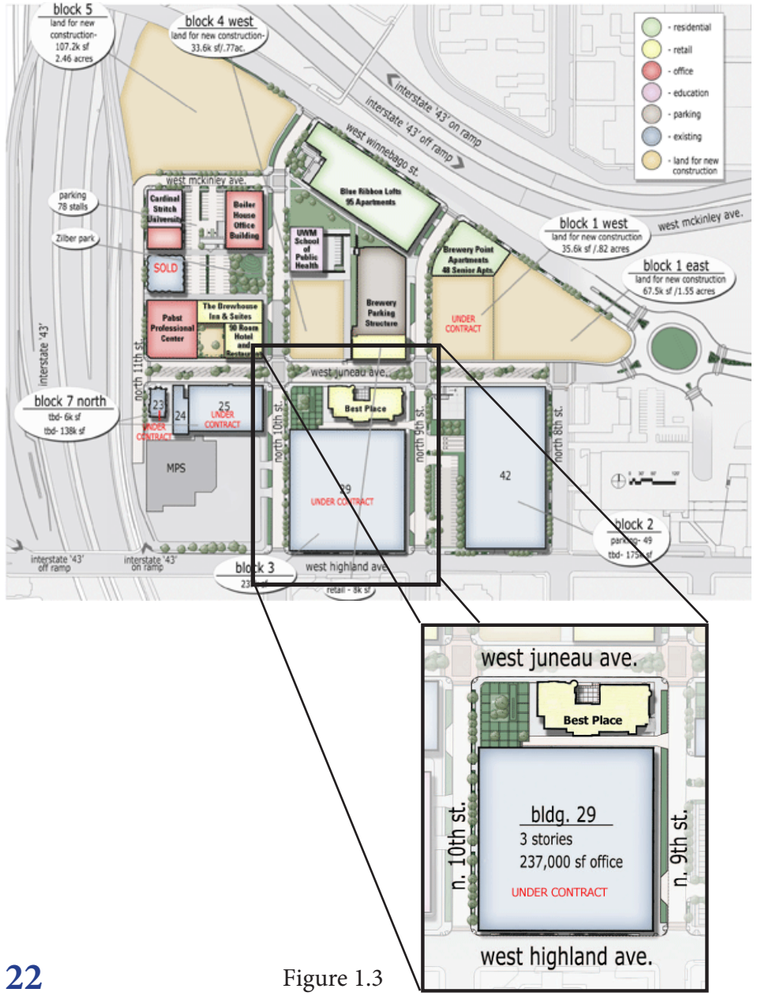


Figure 1.3

Figure 1.4

Figure 1.5

Figure 1.7

Figure 1.8

Figure 1.6

Figure 1.9

Figure 1.10

Project Emphasis

The focus of this thesis is to reuse an abandoned bottling building and redefine it's purpose. Though this redefinition, careful consideration will take place on how to marry the new and the old. The intent is not to preserve the building and make it as it once was. The intent is to take a building rich in history and to enhance those elements while not overpowering them with new architectural elements.

Plan for Proceeding

Research Direction

Different topics will be researched during the creation of this thesis. The main topic of research will focus on the theoretical premise and unifying idea. The secondary topics being researched are project typology, historical context, site analysis and program requirements for the building.

Design Methodology

The design methodologies for this thesis will be mixed. Different methods will be used simultaneously gather quantitative and qualitative information. The information will be gathered using the concurrent transformative approach. Statistics and scientific data will be collected as well as data collection using observation and research.

Documentation

Process documentation will occur bi-weekly. All drawings will be scanned and along with digital files, will be saved onto an external hard drive and to a CD. Any information gathered will be also saved digitally onto the hard drive and CD. During the final upload to the Institutional Repository, I will compile a pdf of all sketch and digital drawings. These will be uploaded along with my final project.

Schedule

Task	Days	Start	Finish
Project Documentation	72	1.14.14	5.28.14
Context Analysis	9	1.14.14	1.27.14
Conceptual Analysis	9	1.14.14	1.27.14
Spatial Analysis	9	1.14.14	1.27.14
ECS Passive Analysis	9	1.21.14	1.31.14
ECS Active Analysis	8	1.24.14	2.4.14
Structural Development	10	1.31.14	2.13.14
Context Development	13	2.3.14	2.20.14
Floor Plan Development	18	2.3.14	2.27.14
Envelope Development	8	2.10.14	2.20.14
Material Development	11	2.10.14	2.25.14
Section Development	11	2.18.14	3.4.14
Midterm Reviews	5	**3.10.14**	3.14.14
Project Revision	15	3.14.14	4.10.14
Rendering	10	4.4.14	4.17.14
Preparation	10	4.4.14	4.17.14
Presentation Layout	6	4.11.14	4.22.14
CD to Thesis Advisor	0	**4.24.14**	
Plotting	4	4.22.14	4.25.14
Model Building	14	4.7.14	4.28.14
Exhibits Installed on 5th Floor	0	**4.28.14**	
Thesis Exhibit	3	4.28.14	4.30.14
Final Thesis Review	5	5.12.14	5.16.14
Awards Ceremony	0	**5.9.14**	
Thesis Document Due to Instructor	0	**5.12.14**	
Theiss Document Due to Repository	0	**5.16.14**	
Commencement	0	**5.17.14**	

Graphic Schedule

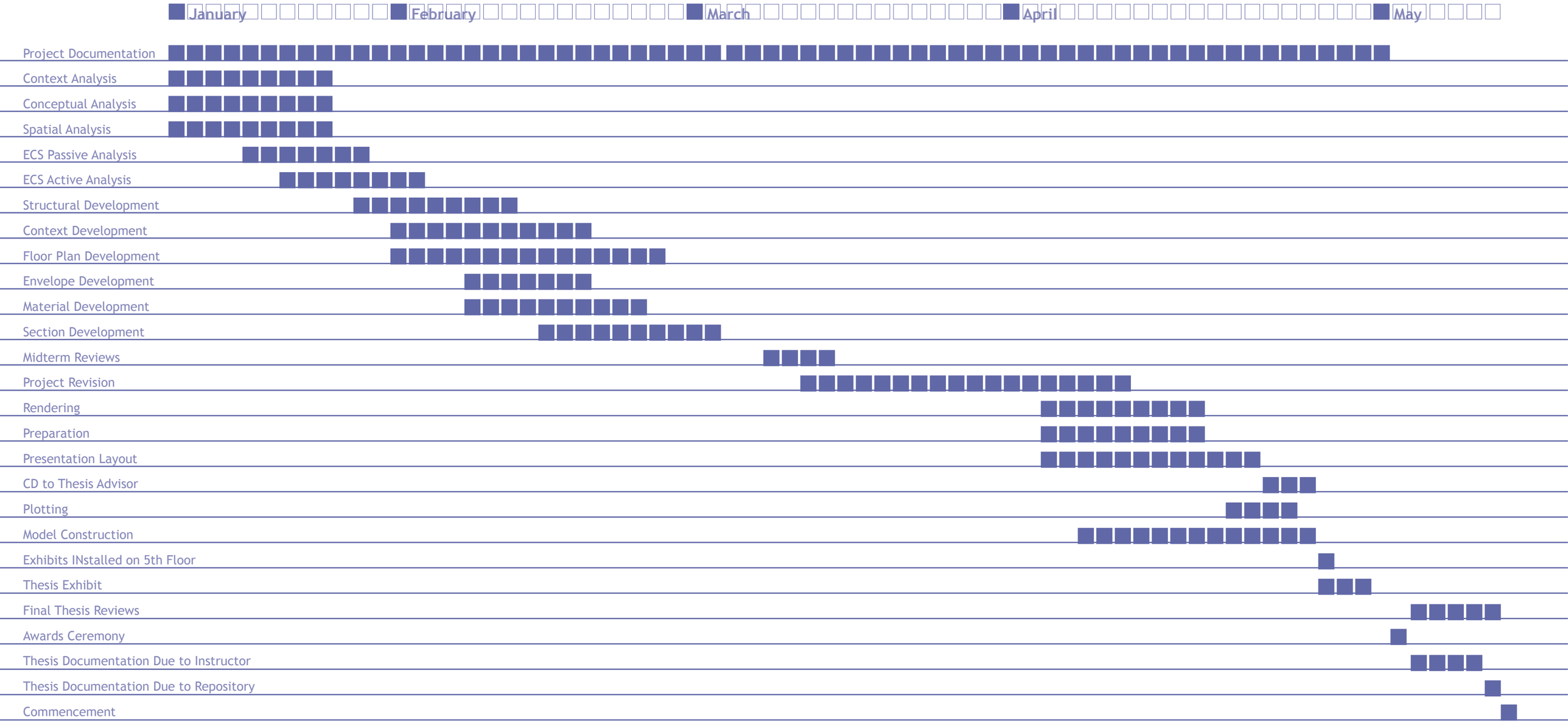


Figure 1.11

Previous Studio Experience

Spring 2010	Drawing for Environmental Designers Still life Master copy	Jason Moore
	Environmental Design Fundamentals Movement Museum Interpreting photographs	Christina Tapper
Fall 2010	Architectural Design I Tea house Boat house	Joan Vorderbruggen
Spring 2011	Architectural Design II Bird house Montessori school Dwelling	Darryl Booker
Fall 2011	Architectural Design III Zombie safe house Snow symposium McCanna House	Regin Schwaen
Spring 2012	Architectural Design IV Math and science laboratory building	Mike Christenson
Fall 2012	Architectural Design V Highrise	Bakr Aly Ahmed
Spring 2013	Architectural Design VI Ghana school	Don Faulkner
Fall 2013	Advanced Architectural Design Wetland research laboratory	Mark Barnhouse

Program

Theoretical Premise

Urban Sprawl

The effect of urban sprawl is seen in cities all over the United States. In the past 150 years, for social and economic reasons, growth moved from urban to suburban areas. Cities are starting to feel the negative effect of this movement. Many city centers are suffering from neglect. Numerous city planners, developers and architects are striving to create a new vitality within America's urban cores. A way for this is be realized is redefining a buildings function. "Communities can sustain and revitalize their existing fabric by finding a new use for existing buildings that have become obsolete (Henehan 2004). If the primary structure of the building is stable, it provides a great opportunity for a city. Refunctioned buildings are a root of culture and history for a community. Reuse of these structures increases the tax base and let cities progress further. Existing buildings are also a sustainable, energy efficient shell for nearly any planned use. There are so many negative effects of urban sprawl, and so many positive effects of adaptive reuse. But people keep choosing to live in suburbia. Why would people continue this trend? Many enjoy the privacy, low cost and greenery in suburban and rural areas. How can designers take those important attributes of suburban living, and bring them into a city center?

Urban sprawl is the growth of a metropolitan area into the bordering, less developed areas. This decentralization usually overtakes rural areas,

including farmland. There are many negative associations with suburbia like traffic, inconvenience, pollution, and isolation. But what about the effect inside the city. Litter, graffiti, empty storefronts with broken windows. The life and sense of a thriving community is gone from these abandoned areas. What community is left has been changed to a community of illness and poverty. Though broken and abandoned, there is still a distinct architecture and history in these areas. That is something a suburban area lacks.

What is historic and important about a strip mall,
large shopping mall or a fast food chain restaurant?

These buildings are built quickly to fit the need for amenities in suburban areas. Where is the pride in architecture within the suburban community? Kunstler argues that poor aesthetics in suburban areas create "places not work caring about," and they lack identity and history (1994). Sprawl has made a sense of community very difficult to realize. In suburban areas, people drive to the grocery store instead of walk. There is reduced pedestrian access to businesses and places of recreation. This depletes the human interaction that gives people a sense of belonging. Often neighbors know each other, but do not have any social interaction further than a "hello." These neighborhoods feature homes with expansive lawns and tall privacy fences. Is it possible that neighbors do not want to talk to each other and desire privacy? For introverted and private people, the appeal is there. Extroverted people also need a time and a place to be separated from everyone else. But there is no need to live in suburbia. Private spaces

can be created anywhere, even within a big, busy city. The home is the place where a person is most comfortable. It is a place for escape and relaxation. That comfort of home can be found anywhere, from a farm in the country to a studio apartment in New York City.

Though residents of urban areas want to leave to pursue more privacy, the main push for them to leave is economical. The increase of commuters creates a need for better roads. Taxes increase all across the United States to pay for the roadways. People and their businesses move out of the city limits to avoid higher taxes. Eventually the expansion continues outward, depleting the population and businesses from the center of the city. This trend continues, lowering the tax base of the city, and turning thriving city centers into rundown and abandoned centers. What developers do not realize is there are many costs to urban sprawl. Infrastructure, like roads, public services and utilities, is a high cost which is needed to support the new development. Areas of urban sprawl are very automobile dependent. For those that work in the city, commute time is extremely long. The average travel time to work in Wisconsin is 20 minutes. There are those that live within the city limits near their place of work, so their time is less than five minutes. On the other hand there are people who drive over 35 minutes to get to work everyday. Shopping and commuting to work often require the use of a vehicle. This is due to separation of residential and suburban business zones and separation from the city, where many suburban residents work. Urban sprawl has created another problem where the majority of jobs are not located outside the city. This is due to affordability

and expansion potential in suburban areas. States should start to limit the area of cities. This would prevent cities from continually expanding outward and over taking the farmland and wildlife areas. The promotion of inner city development and infill should be used by cities. Through Leadership in Energy & Environmental Design, tax incentives are given to the owner of adaptive reuse building, because of their exceptional sustainability. The longevity and sustainability of housing developments is disheartening.

Along with the economic impact of urban sprawl, there are environmental impacts as well. The main environmental and public health issue is dependence on the automobile. After World War II, it became commonplace for every family to own a vehicle. The city air became polluted with car and industrial fumes. Health officials recommended moving to the suburbs for health reasons. Now the air in the suburbs are just as bad as the air within a city. The most polluted air is on a highway, and that is where suburban residents spend a lot of time. There has also been an increase in traffic accidents, leading to more damaged vehicles in junk yards. Vehicle dependence also has an effect on rain and water supply. As more land is being covered by impervious surfaces, less water is absorbed into the earth. The unabsorbed water then picks up gasoline, oil, and other pollutants on parking lots and roads. This water then runs into streams and rivers causing further contamination of our freshwater. The air pollution, water pollution and increase in impervious surfaces has a large negative impact on animals, wetlands, and wildlife corridors. Only .5% of the grasslands survive in Wisconsin. Urban sprawl destroyed 50% of the wetlands in Wisconsin.

There were originally 5.5 million acres of oak savanna in Wisconsin, and now there is only 500 acres. This significant decrease leaves animals without homes and nowhere to go. Deer and coyotes start to overrun the suburbs, creating an unsafe environment for people and animals. Infill is a sustainable way to use land that is already developed within a built up area for further construction.

Infill and adaptive reuse are essential in renewing neighborhoods and creating prosperous communities within a city. Abandoned buildings and and vacant lots drive down property values. Reuse of historic buildings for restaurants, retail and sports venues increases tourism. Redefining buildings is more economical for the city in that the renovation requires fewer construction material. It requires more labor, which can be found locally. Urban sprawl is a problem that needs to be addressed. There are many social, economical and environmental issues that can be fixed with adaptive reuse practices. Hopefully, a realization will be made that the United States is wasting land and monetary resources when it isn't necessary.

Past Present and Future

As urban sprawl continues to happen all over the United States. Designers need to take a look at the past to learn from what has been done. Thoughts toward architectural practices need to change in the present in order to positivly affect the future. If steps are not taken, time, energy and resources will be continue to be wasted.

What buildings we tear down defines our values. It defines the values of our culture. The present can always learn from the past. In learning about and understanding the past, we can find ways to weave the past and the present into one great American city. It has been agrued that a city cannot grow without old buildings. These buildings need not be museums and restorations, but instead plain, low-value, possibly rundown buildings. The buildings we keep are reminders of the history of place.

If all buildings are torn down, there is no sense of time. Historic buildings define the character of the past. Old buildings help emphasize the history and tradition that surrounds them. As with the Pabst Brewery, a lot of history is contained within the complex. It is one thing to look at a photograph of an old building, but to be able to touch and experience the building in three dimensions connects one with the past.

Presently, there are many advantages to renovate old buildings. To demolish a building takes energy. A demolition crew would knock down the existing structure and level the site in preparation for a new purpose. The new building or proposed purpose would require additional energy to create. Not only would there be more time needed from start to finish, but more materials would be required to build a new structure and foundation.

The attitude towards old buildings has been a negative one, and somewhat continues to be. Planners and developers typically see old structures as

obsolete and unwanted. The reason being the purpose, the function, is not the same as it was originally. Instead of reimagining the building and redefining the purpose, they were easier to knock down.

Granted there are times, when the structure is failing, where it makes more sense to tear down and start anew. But if the structure is stable like many industrial structures, reusing existing buildings is advantageous. Industrial and manufacturing buildings built in the early 1900s were built to last. It is very economical to redefine a building that has a stable structural system.

Any old building may adapt multiple times throughout its lifetime. This adaptation does not always mean the use is being changed. Deciding what elements to keep within an old building also defines the values of our culture. In the past, this often took place without consideration of the building's history. Deciding what to save and what to do with the building is just the beginning of the process. Consideration must be taken about how much can be removed without taking away the quality and history. Designers, planners and developers need to think about what qualities they want to restore to the original state and what qualities they want to preserve. This is individual to each project, and will never be agreed upon by everyone involved. Choosing elements to keep may be an arduous process, but it is necessary in keeping part of the history intact.

Designers always seem to be looking for the newest, most innovative thing. This includes architects. Our new architectural designs leave an imprint

of the culture and of the technology for the future occupants to see. A building being built today is more advanced than a building built only a year ago. What is to say we can't leave an imprint within an old structure that has been redefined? The reuse and redefinition of old architecture can be even more powerful than building a new structure. Preservation in the future would entail designing adaptive reuse technological buildings that are durable and built to last. The buildings would also be designed to offer an easy transition from one use to another.

Designers would be challenged to build for many uses over the lifespan of the building. Buildings will need to be flexible and adapt to different spaces and uses. It is impossible to consider all of the possibilities, but an effort can be made to research what may possibly occupy the building within a specific span of time. This planning would consider the ever changing economy, advancements in technology, growth within the city and who would be using such a building.

There are many social, economical and environmental issues that can be fixed with adaptive reuse practices. Hopefully, a realization will be made that the United States is wasting natural resources, material, and money to knock down and rebuild when it isn't necessary.

Summary

Urban sprawl and disregard of architectural history is damaging our culture. Urban sprawl will continue until we take a serious look at the effects. Presently, cities are feeling the negative effects of this movement. Some developers and architects are pushing for a more active urban core.

Designers need to see the potential in broken and abandoned buildings. There is an important sense of architectural history that suburban areas lack. A strip mall is lacking extensive history and personality. Buildings today are being built to fit the face paced needs of the suburban life. There is a lack of pride in the architecture within suburban communities.

Histories of cities need to be maintained through architecture. Some buildings are more adapt to change from one function to another, due to structural stability and other factors. Even with these limitations, there are many great candidates for adaptive reuse projects.

There is a strong correlation with the need for leaving behind our stamp in architecture and the need for old buildings to adapt. Architects put a lot of time and energy into designing, only to have that building torn down in less than one hundred years. That seems unfair.

Societies keep what they value. If old buildings continue to be torn down, what does that say about society. Does the society not value history and fine architecture? In understanding the past, societys can learn how to

combine new technology and ideas with old structures. By redefining old historic buildings, societies are defining their values. The community is enhanced through keeping the history and adding new amenities through the adaptive reuse projects. History can be easily taken away from a city, it is a designers job to ensure cities are not stripped of it.

Designers should also plan far into the future for each building being presently designed. Whether in new construction or adaptive reuse, thought should be given to what potential the building has for redefinition and reuse if the intended function is no longer required. Tenants move or as technology advances, new and better integration is needed within buildings. This thinking helps to ensure a building will be there for a long time, and will not be torn down.

All buildings standing today are a candidate for adaptive reuse. What they need is a vision and dedication to the redefinition, and anything is possible. Structures contain the ability to adapt well. Many case studies on adaptive reuse a building was previously an industrial facility, and is changed into a mixed use building.

Adaptive reuse, for the sake of the environment, should become the norm within our society. This is not yet the case, but it is on it’s way to becoming the norm.

Case Studies

Ford Assembly Building

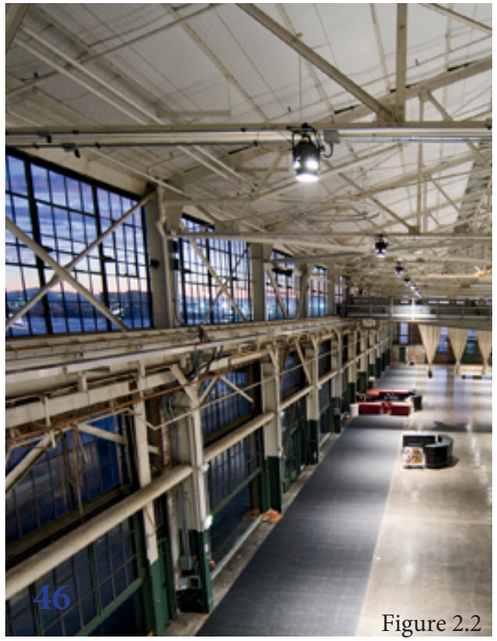
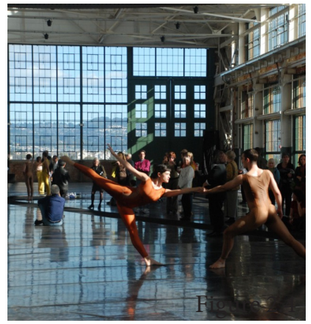
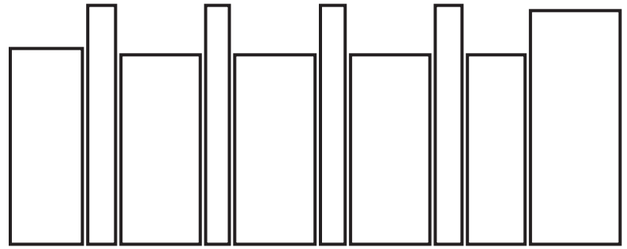


Figure 2.2

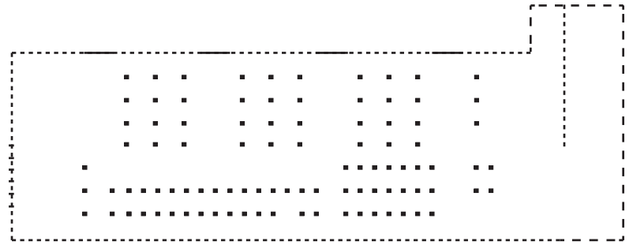
Figure 2.3





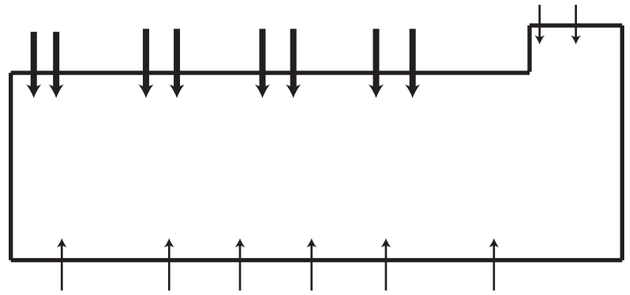
Unit to Whole

Figure 2.5



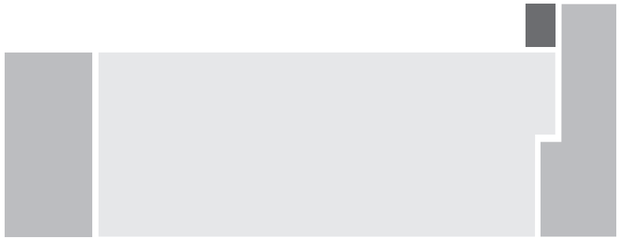
Structure

Figure 2.6



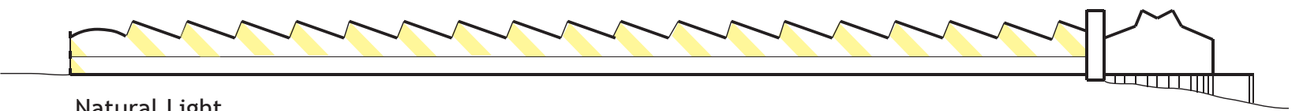
Circulation

Figure 2.7



Hierarchy

Figure 2.8

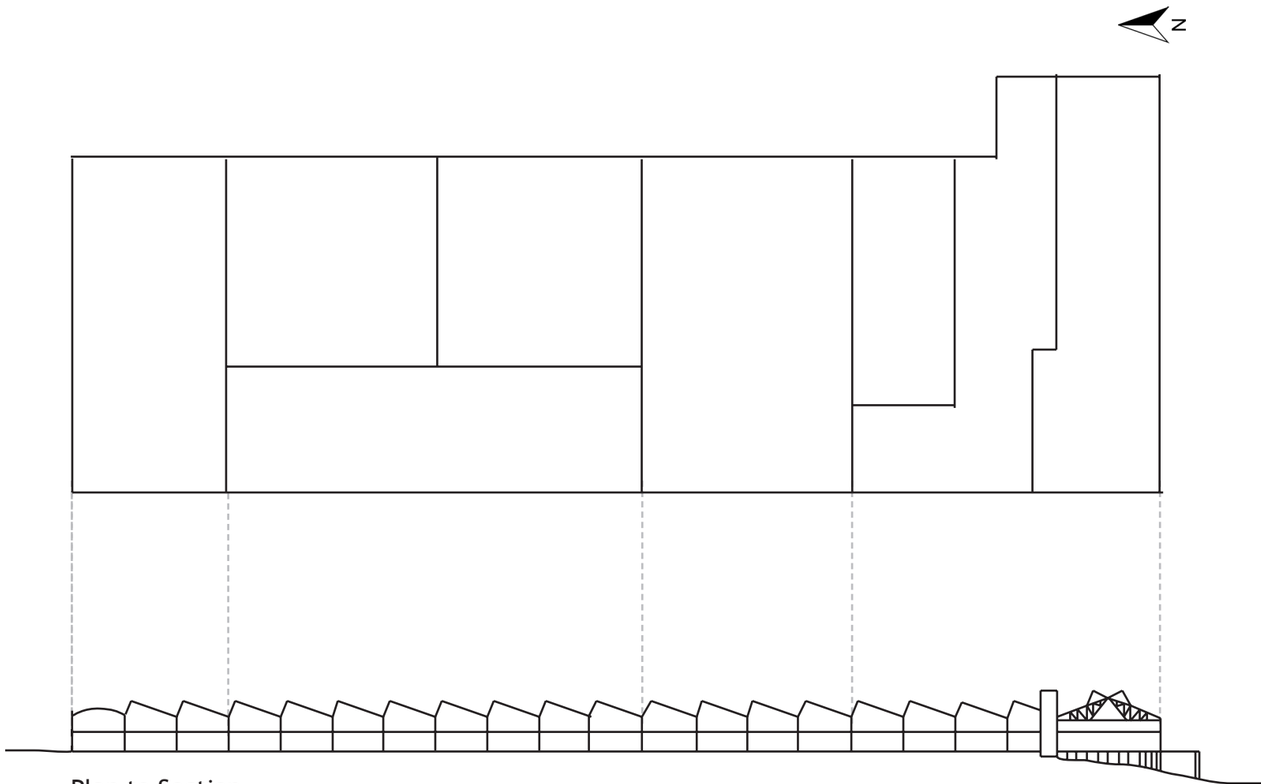


Natural Light

Figure 2.9

Massing

Figure 2.10



Plan to Section

Figure 2.11

Location	Richmond, California, USA
Typology	Adaptive Reuse
Size	525 000 sq. ft.
Architect	Marcy Wong Donn Logan Architects

The beauty of the Ford Assembly Building is enhanced through the renovation by Marcy Wong Donn Logan Architects. The architect took advantage of the large open spaces and created a cluster of different spaces instead of creating many small closed off spaces. The restored the exterior and found tenants who were interested in large, unfinished spaces.

The Ford Assembly Building is a steel frame structure with a slab on grade foundation. The exterior is made up of non-structural brick, large industrial garage doors, and industrial windows. The frame sits on spot footings on pilings. This structure creates large bays and these large open spaces are perfect for the tenants.

The structure is one singular bay which is, now, separated into smaller bays. The space is dynamic due to the changing vertical heights throughout the building. The small bays are seen in the plan and are directly related to the structure and the skylights.

The Ford Assembly Building uses a rectangular grid to create its structural

geometry. This grid is seen in the plan and section. The skylights also fall upon this rectilinear grid, which creates in interesting saw-tooth style roof plane, seen in the section.

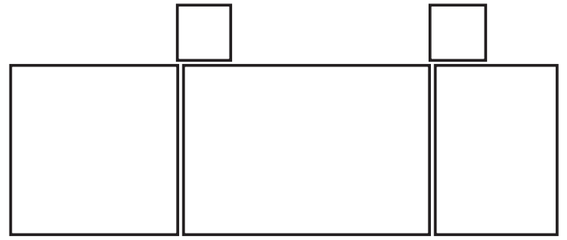
The windows within the building help to let in a lot of natural light. Most factories buildings had minimal windows, but the Ford Assembly Building has over 40,000 windows panes. The buildings roof, with large north facing skylights, creates a well lit space.

The two story height found in some areas of the building create a sense of hierarchy. The overhanging portion on the south end of the building creates a greater sense of hierarchy due to the elaborate structure and the placement over the water.

The open layout of the Ford Assembly Building is similar to the open floor plan of the Pabst Brewery Bottling Building. The Ford Assembly Building is a great adaptive use project. Because it is mixed use, it is very similar to the retail portion of my project. Most mixed use adaptive reuse projects are smaller residential units. It is a great example of how to keep an open space, but contain many different uses within that space. The Ford Assembly Building kept the history while integrating new technologies.

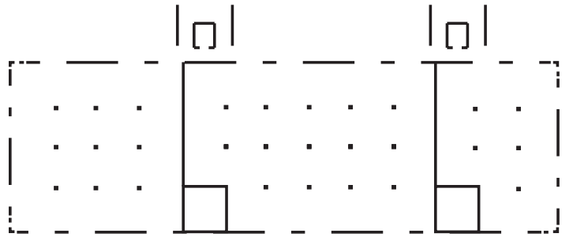
Figure 2.12

Figure 2.13



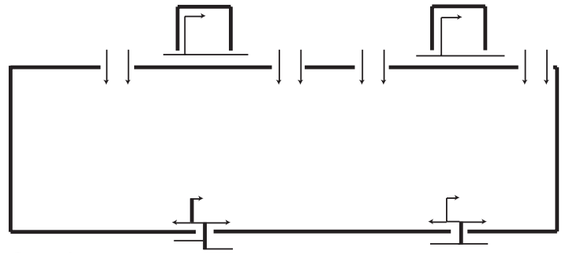
Unit to Whole

Figure 2.14



Structure

Figure 2.15

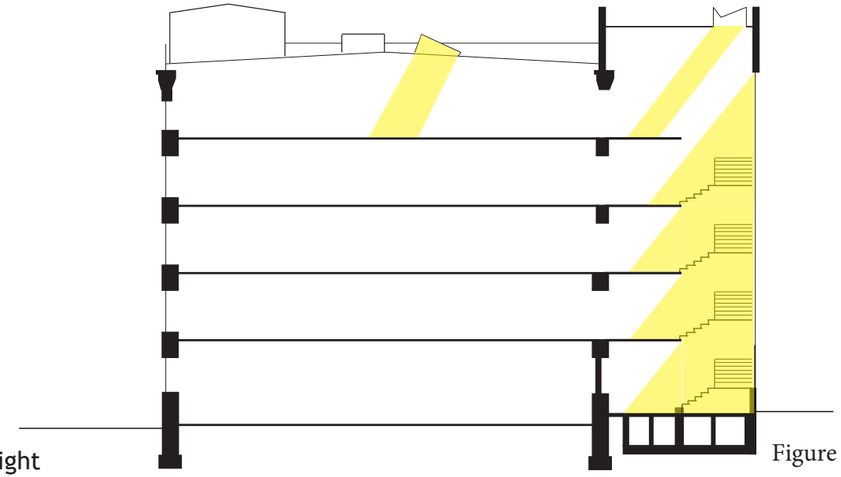


Circulation

Figure 2.16

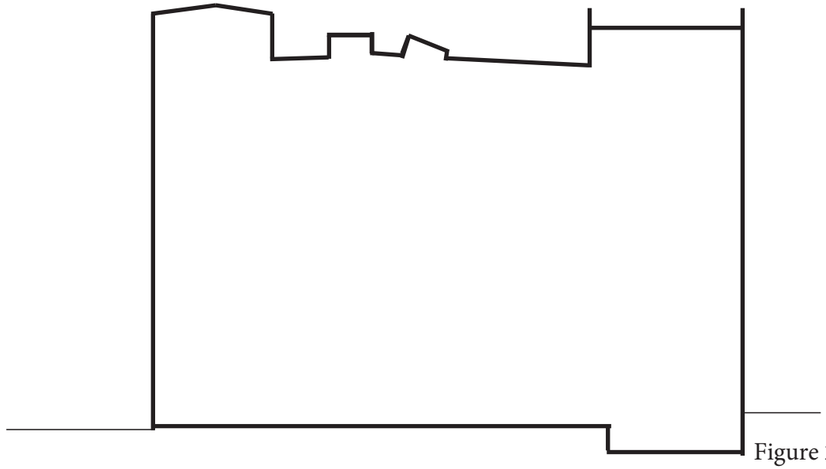
Hierarchy

Figure 2.17



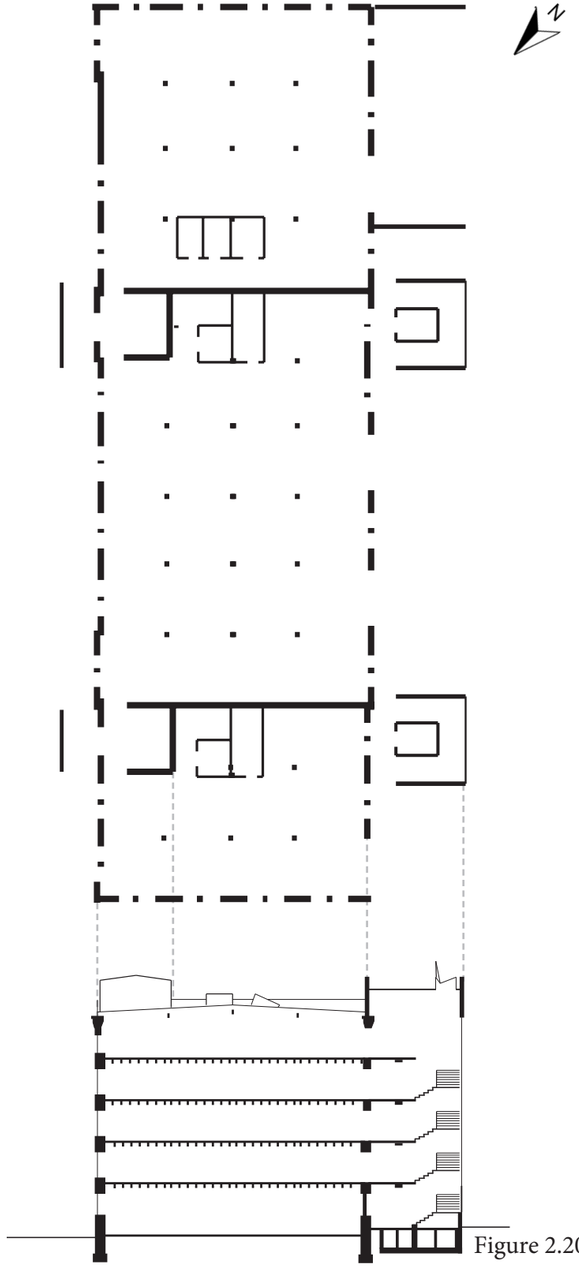
Natural Light

Figure 2.18



Massing

Figure 2.19



Plan to Section

Figure 2.20

Location	Gliwice, Poland, EU
Typology	Adaptive Reuse/Mixed Use
Size	54 000 sq. ft.
Architect	medusagroup

This old granary and drug warehouse has been renovated into a mixed use building. The Granary Lofts include retail and office spaces on the ground floor and the top four floors include 30 lofts of varying sizes. The architects preserved the raw wood and brick exterior and interior. The existing stairways and cargo elevator were also renovated. A drastic change to the building is seen in the addition of two vertical cores for circulation. There is a clear separation between the cores and historical facade. There is actually a space between the cores and building which is covered with glass.

The Granary Lofts is a single rectangular structure with two masses added adjacent to the main structure. The structure is very consistent in its spacing which creates a repetitive structural system. This system is based on the 5 meter by 5 meter grid of columns. This creates a great spacing for walls in the residential and retail spaces. The structural exterior brick, accompanied by the post and beam structure within, gives the lofts a lot of warmth in a previously commercial setting.

The circulation within the building is quite unique. The horizontal circulation

is done inside the existing brick and wood structure. The vertical circulation is done outside of the main structure, in the two metal paneled additions. The two cores seem to divide the floor plate into three sections. These three sections are divided in to smaller rectangles and squares, seen in structural diagram.

The Granary Lofts features over 200 windows to allow light to all parts of the building. The windows are new energy efficient windows which were chosen to be as close in appearance to the originals. The light is important for the winter heat gain in such cold climates.

The Granary Lofts has an obvious hierarchical nature. The two metal additions, which serve as circulation cores, are dominant. These additions are unique and draw people attention, making it a great place for an entrance.

The Granary Lofts is the most similar to my vision for the Pabst Bottling Building. The sizes are greatly different, but the use of retail/office space below residential spaces is what my thesis contains. The building is a great example of a place where you can work, eat, play and live.

Figure 2.21

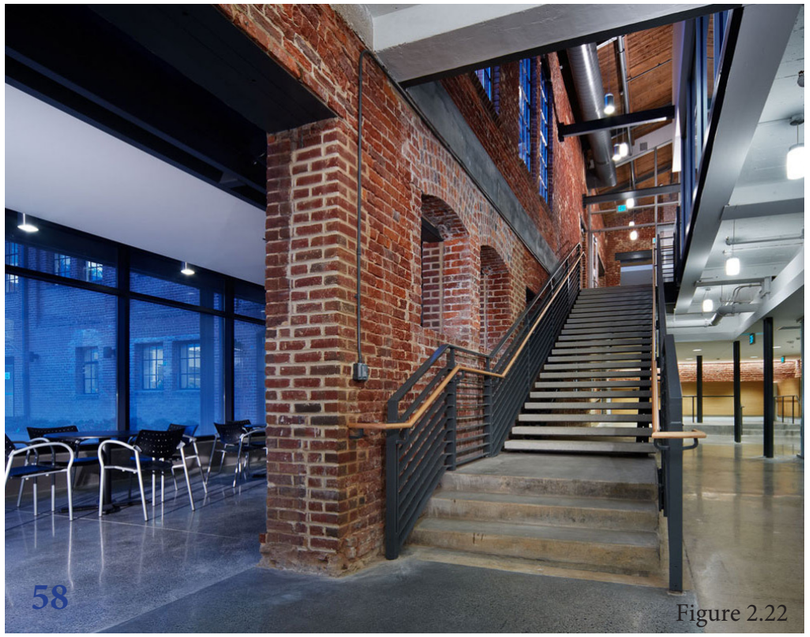
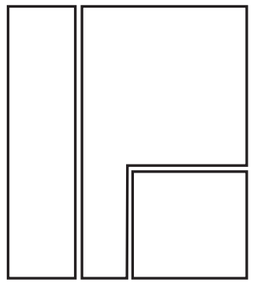
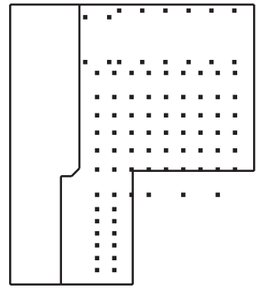


Figure 2.22



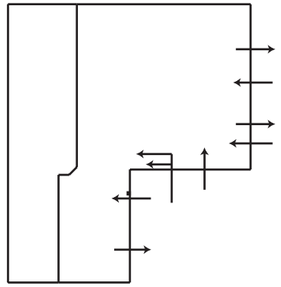
Unit to Whole

Figure 2.23



Structure

Figure 2.24



Circulation

Figure 2.25

Heirarchy

Figure 2.26

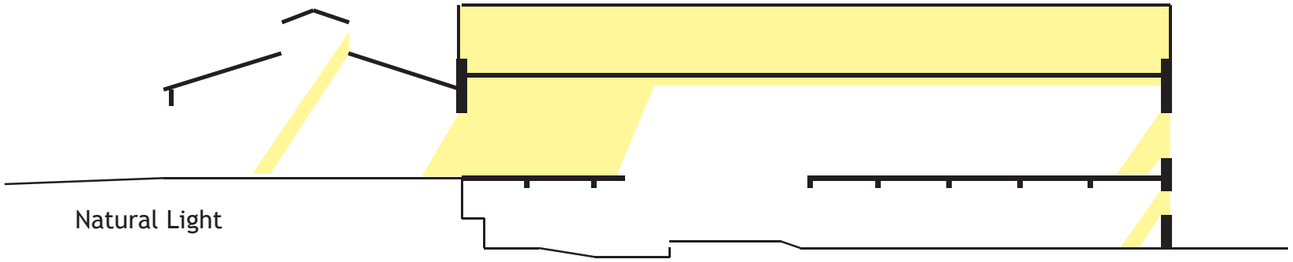


Figure 2.27

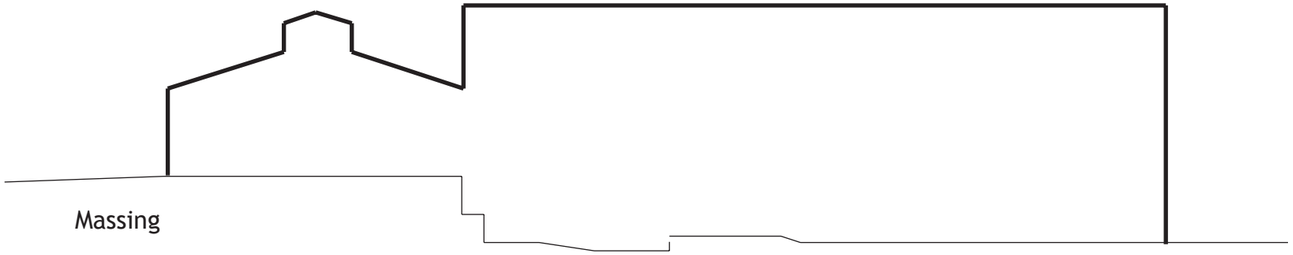


Figure 2.28

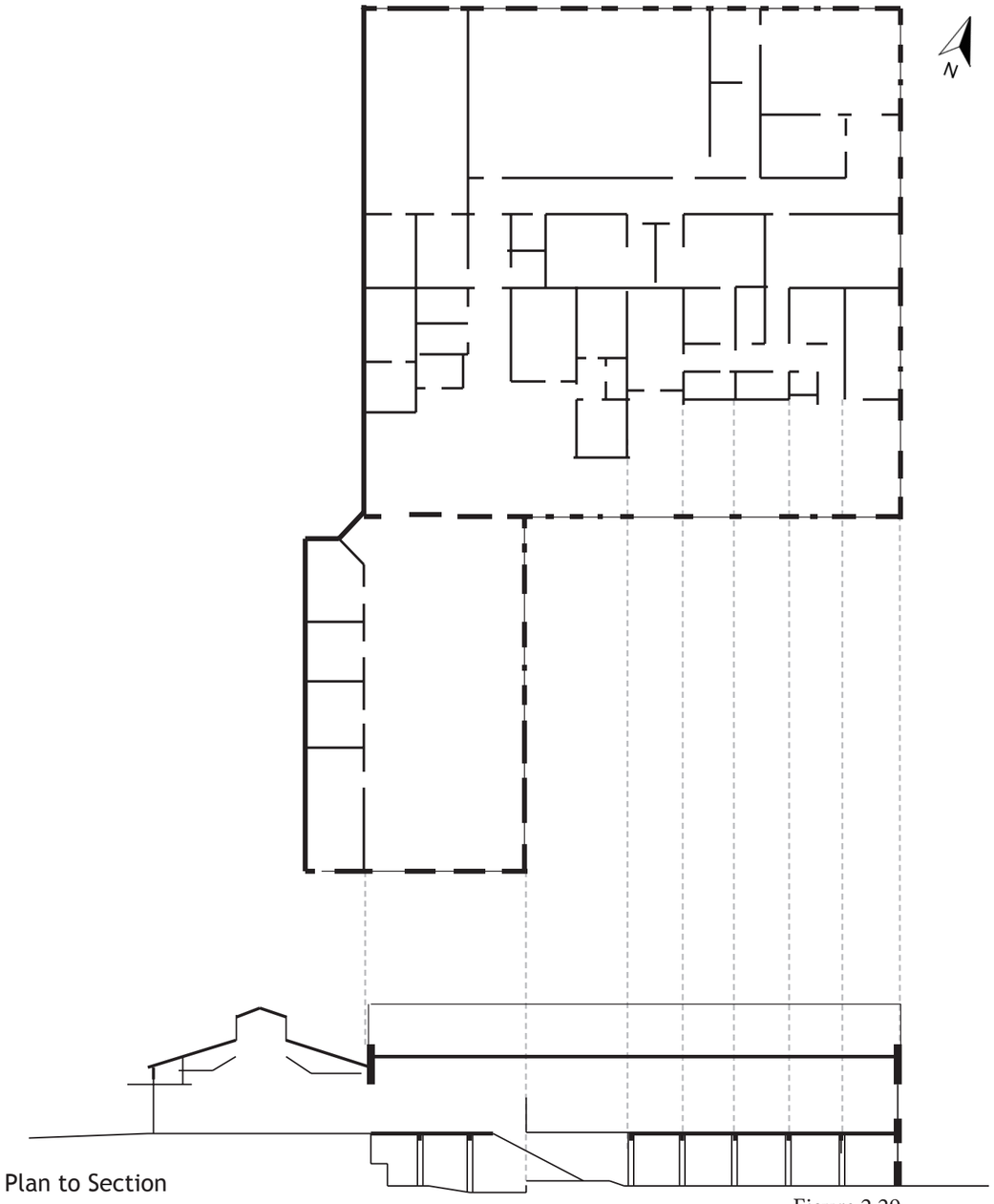


Figure 2.29

Location	Raleigh, North Carolina, USA
Typology	Adaptive Reuse & Education
Size	51,000 sq. ft.
Architect	Pearce Brinkley Cease + Lee

The Park Shops three story building holds many different uses. The Northern Carolina State University classroom and research building contains lecture spaces, laboratories, production studios, offices and much more. It also provides a plaza out front for the campus. The old steel shop class building was in need of an update.

The architects removed everything but the brick structure. They sandblasted the brick to bring it back to its original state. There are many modern interior additions to the building which contrast well with the original brick. As well as a new, all glass vestibule facing the plaza.

The Park Shops building is and L shaped rectangular building. The floors are almost identical, except for a few double height areas which bring in a lot of natural light. The existing floor structure was also removed in a few areas and replaced with steel and concrete to create a columnless space in the video-conference room.

The circulation follows through the two main wings of the building. These wings along the south side of the structure also serve as a main entrance and exit out to the plaza.

The Park Shops building has a lot of natural light. This is due to the clearstory windows throughout the building. The classrooms are underneath the clearstories which maximizes natural light penetration.

There is not much of a sense of hierarchy within the building except for the double height areas in the lobby. The portion that has a greater sense of hierarchy is the plaza. The way the building frames the plaza gives the outdoor space a sense of safety and comfort.

The Park Shops serves as a good building for study. Like this building, the Bottling Building may require a full demolition of the interior spaces and structure to be replaced with a more sturdy structure and flooring system. Like Park Shops, the brick will be kept intact. The way modern additions were added are very similar to the vision for the Pabst Bottling Building.

Summary

The Ford Assembly Building, Granary Lofts and Park Shops are all great examples of adaptive reuse projects. All three projects were old brick buildings which were renovated and modern elements were added. This fits the theoretical premise and unifying idea of this thesis.

All of these mixed use buildings provided insight into programing and spatial layout. The Ford Assembly building had the most interesting solution to breaking up the large space. None of the buildings had all the programmatic spaces planned for the Bottling Building. The combination of parts of these three projects into one would create a program similar to the one for the Bottling Building. The 237,000 sq ft available in the Bottling Building falls in the middle of the range in these case studies.

The Ford Assembly Building it is very similar to the retail portion of my project. The most unique part of the Ford Assembly Building is the natural light through the clerestories. There is not a lot of light that reaches into the Pabst Bottling Building, but natural light is needed to enhance the interior spaces.

The Granary Lofts are the best example of a residential mixed use project. More research will be done involving the programing and layout of the residential portion of the Bottling Building. This will involve finding new construction multi-family housing complexes and comparing them to the Granary Lofts.

The Park Shops Building is a great study to show how new additions can be integrated with the old structure. This can be done in a way that enhances the history and age because of the contrast with the new modern additions. Nothing can be added to the facade of the Pabst Bottling Building because it is in a historic district, but additions can be made to the inside. These interior additions will contrast, like the Park Shops building and create a balance between new and old.

These case studies exemplify new technology, adaptive reuse and historic preservation combining to develop a beautiful structure. The brick structure was maintained in all three cases and helped to keep a bit of history in each project.

Historical Context

Wisconsin

Wisconsin was a part of the Northwest Territory from 1788 until 1800. It was part of a few other territories before becoming its own territory in 1836. Wisconsin became the 30th state in 1848.

The first brewery was opened by John Phillips in 1835, while still a part of the Michigan Territory. By 1860, there were almost 200 breweries in Wisconsin, and over 40 of them were in Milwaukee.

Milwaukee

Milwaukee was a large trading post in the late 1700s. Solomon Juneau took over the trading post in 1825 from the French trader Vieau. The fur trade business stared to decline, so Juneau started to develop the land around the trading post. He, along with a lawyer, bought 160 acres between Lake Michigan and the Milwaukee River. They named it Juneautown. Around the same time, a man by the name of Kilbourn began to buy land on the west side of the river and called it Kilbourntown. And south of Juneautown and Kilbourntown, Walker's Point was being founded by George Walker.

All three men wanted the largest town in Wisconsin. They fought often and even started the Milwaukee Bridge War in 1845. In January of 1846, the three towns were combined to create one city of Milwaukee. Juneau was elected major to the town of now 10,000 people. It became the largest city

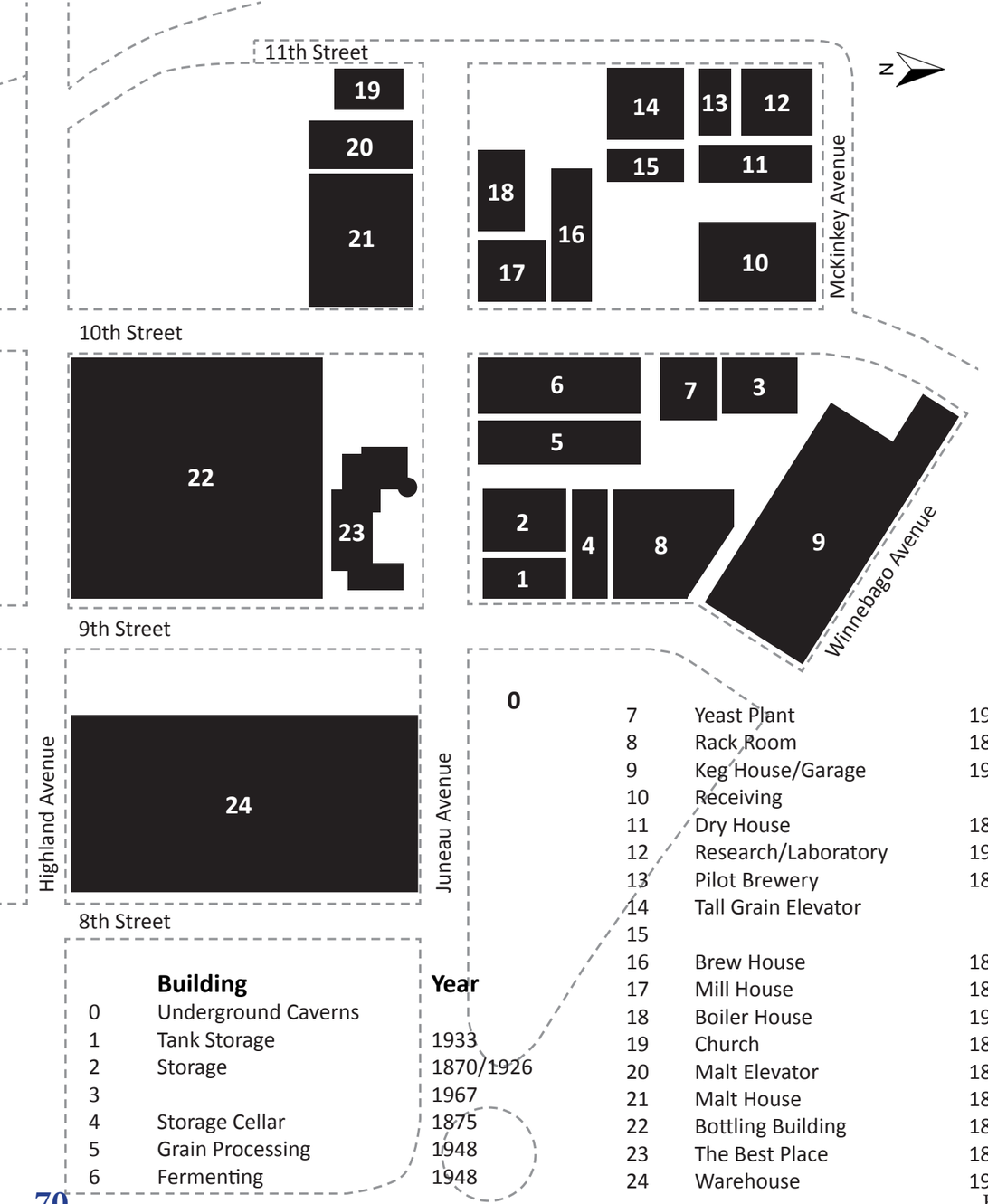
in Wisconsin, and still is today.

Many German immigrants looked to Wisconsin for inexpensive farmland. A man named Carl Schurz came to Milwaukee and encouraged other Germans to settle in Milwaukee as well. The impact of the German residents is seen in the festivals still held today. One of the most famous festivals is Oktoberfest, which involves the consumption of vast amounts of beer.

In 1843, it has been recorded that Milwaukee housed 138 taverns. This is one tavern for every 40 people living in Milwaukee that year. Milwaukee became infamous for Germans and beer since the early 1850s. There were more than 20 breweries by 1856 and most were owned by German immigrants.

The Great Chicago Fire of 1871 was a tragic event, but it spurred the growth of the breweries in Milwaukee due to the destruction of the breweries in Chicago. Milwaukee brewing companies were able to transport beer down the river to Chicago. In the 1900s, four of the largest breweries were open in Milwaukee. These names are still known today; Miller Brewing, Valentin Blatz Brewing, Joseph Schlitz Brewing and the Pabst Brewing Company.

As industry is moving out of the United States and into other countries, Milwaukee has been seeing many abandoned areas of town. The city has seen a 40% decline in manufacturing jobs since Schlitz, Pabst and American Motors left Milwaukee.



	Building	Year
0	Underground Caverns	1933
1	Tank Storage	1870/1926
2	Storage	1967
3		1875
4	Storage Cellar	1948
5	Grain Processing	1948
6	Fermenting	
7	Yeast Plant	1918
8	Rack Room	1890
9	Keg House/Garage	1911
10	Receiving	
11	Dry House	1894
12	Research/Laboratory	1913
13	Pilot Brewery	1894
14	Tall Grain Elevator	
15		
16	Brew House	1877
17	Mill House	1891
18	Boiler House	1948
19	Church	1872
20	Malt Elevator	1891
21	Malt House	1882
22	Bottling Building	1891
23	The Best Place	1880
24	Warehouse	1977

Figure 3.1

Pabst Brewery

Two of the Best brothers, Charles and Jacob Jr, traveled from Mettenheim, Germany to Milwaukee in 1842 to start a vinegar factory. The rest of the family traveled to Milwaukee in 1844. Jacob Best Sr. had a brewery in Germany, which he relocated to Milwaukee and the brewery of Best and Company was established on Chestnut Hill Street. The brewery was a family business, run by Jacob Best Sr and his four sons. They made about 300 barrels of beer per year. In 1850, two of the sons, Charles and Lorenz decided to start their own company, Plank Road Brewery, which later became the famous Miller Brewing Company.

Jacob Best Sr.'s eldest, Phillip, took over for his father in 1853 and in 1895 changed the name to Phillip Best Brewing Company. Phillip Best had two daughters, Maria and Lisette. Maria married a steamship Captian Fredrick Pabst in 1862. In 1863, Pabst bought a share in the company. Lisette married in 1866 to Emil Schandein, who then purchased the rest of the shares from Phillip Best. In 1869, Phillip died.

In 1871, in the wake of the Great Chicago Fire, Pabst had a great idea. Instead of sending water to Chicago like the other breweries, he decided to send beer. This turned out to be one of the smartest decisions Pabst ever made.

Fredrick Pabst bought a brewery located in Menomonee Valley which he

called the South Side Brewery. By 1874, the company was the largest brewer in the nation. In 1879, a fire destroyed almost all of the buildings along Juneau Avenue. The two buildings that remained were the Stock House and the Brew House. Thankfully, the brewery was able to continue production at the newly purchased South Side Brewery. The ornate office building for Fredrick Pabst was built in 1880 following the fire, as well as the Malt House which was finished in 1882.

During the 1890s the company continued to rebuild and expand the brewery. Architect Charles Hoffman was commissioned to build many of the buildings, including the Bottling Building. In 1892, Pabst bought another Milwaukee Brewery which raised the companies value from $4 million to $10 million dollars. In 1888, Lisette's husband Schandhein died, leaving the company to Pabst. The name was changed to the current, Pabst Brewing Company in 1889.

Fredrick Pabst died in 1904, and the brewery was passed down to his sons, Fredrick Jr and Gustav. In 1919, the prohibition caught the sons off guard, but they were smart. The brothers came up with new products like "Pabstette" a whole milk product, Pabst "Wonder" cheese, and soft drinks. They also sold malt extract, which is used to make beer. On the warning label they warned people not to make beer out of the extract and essentially gave the step by step instructions on the warning label. Pabst kept on the good side of the law by renting out a building to the government which was used to lock up beer and liquor.

In 1934, a year after the prohibition ended, Pabst's sales broke the 1-million-barrels. In 1932 it merged with the Premier Malt Company in Illinois, which moved the Pabst offices to Chicago in 1933. The barrel total tripled by 1946. In 1961, after a rise back to the top after being the 11th largest in the nation, it became the 3rd largest. This may be correlated with the moved from the corporate offices back to Milwaukee from Chicago in 1961. Barrel sales nearly quadrupled by 1968 after purchasing the Blatz Brewing Company. Pabst sales reached 15.6 million barrels in 1978 and then fell from its number one ranking once again.

In 1996, Pabst Brewery laid off over 70% of their workers and moved production from Chestnut Hill in Milwaukee to a La Crosse plant. The Pabst Brewery complex stood vacant until Joesph Zilber purchased the buildings in 2006 to create "The Brewery." His plan was to turn the complex into an adaptive reuse residential, office and retail area.

Bottling Building

The Bottling Building at 1140 N. 10th Street is the largest building in the Pabst Brewery complex. This three-story, 237,000 square feet building is located on the south end complex. The Bottling Building falls between North 9th and North 10th streets and West Highland and Juneau Avenues. The Bottling Building is directly across from a parking structure that has over 900 stalls.

The building, like many in the complex features a Cream City brick. The Gothic Style was an influence on the architect, Charles Hoffman. He wanted to bring old world character to the buildings because the Pabst Company was an old company by 1891 when the Bottling Building was being built. He used castellated parapets and corbelling throughout. The Bottling Building was worked on in 1911, but there is not much information about what changes happened in the renovations.

There are plans to convert the Pabst Bottling Building into apartments. These apartments would be marketed to international students at Marquette University, University of Wisconsin in Milwaukee and other area colleges. They are still working on the plans. The number of apartments has not been decided yet, but they are thinking somewhere between 400 and 500 students. The Bottling Building has plans that will include a fitness center, study hall, a special area for teaching English.

Goals for Thesis

Academic

With this thesis project, I am completing the requirements to obtain a Masters degree in Architecture from North Dakota State University. I have always been interested in preservation through architecture. Through school I have found passion for adaptive reuse projects. Through this thesis, I hope to explore the possibilities of adaptive reuse. I hope other students will see the negative implications of urban sprawl and new construction, and will think about adaptive reuse in a new positive light. Hopefully my generation will think differently about how they design and buildings will be made to adapt well and this idea of integrating new and old will be taught in architectural schools across the globe. There are so many new and exciting technological advances that enhance architecture and one's experience. It is beneficial to current and future generations of students to think about architectural design differently.

Professional

During my research, I have learned a lot about adaptive reuse and preservation practices. I would love to become an expert on this topic. Many adaptive reuse projects become LEED Certified, so I plan on becoming a LEED Associate during my career. My overreaching goal professionally is to help create a more beautiful and sustainable world through architectural design. My redesign of the Bottling Building will show my passion for adaptive reuse and how I can successfully find a balance between new technology and a historic building.

Personal

My personal goal is much like my professional goal, to create a more beautiful and sustainable world through everything that I do. I want to do the best I can in all aspects of my life, including, but not limited to, design. I want to be able to look at all I have done, academically, personally and professionally, and have a sense of accomplishment. Whether I do multiple small projects or one large project that positively impacts the world, it doesn't matter. This thesis is a stepping stone to adaptive reuse projects in my professional career. I would be happy working on only adaptive reuse my whole life. To me, it is more challenging than creating a design from scratch. There are usually historical zoning codes to follow and difficult decisions on what elements to keep and what new elements to bring in. I find it fascinating and hope my love will grow through the development of my design.

Site Analysis

Qualitative

The Pabst Brewery Complex contains over 15 original structures. Some of the existing buildings include the Brew House, Malt House, Bottling Building, Shipping Center, Cold Storage, Keg House, Boiler House, etc. The Pabst Bottling Building, my chosen site, is surrounded by many existing structures. It is on the south most end of the complex.

The complex is in close proximity to high traffic areas. The Milwaukee Area Technical College and Marquette University are within walking distance of the Bottling Building. Also nearby are the Milwaukee Admirals' and Milwaukee Bucks' stadiums. West Highland Avenue, the avenue directly south of the bottling building, crosses over Highway 43 to the west. West Highland Avenue is a fairly busy street. Though I noticed West State Street, one block south of West Highland, was twice as busy. This is likely due to West State Street bridging across the river becoming East State Street. West Highland Avenue does not cross the river.

Nevertheless, the Pabst Brewery Complex has a fair amount of traffic in and around it. Once more renovation and restoration is done to the rest of the complex, there will be an increased amount of traffic.

The complex has fairly uninteresting views from ground level because the view is blocked by the buildings. The Pabst Brewery sits on the top of Chestnut Hill. Once on the upper floors of the buildings you can see a lot of downtown Milwaukee. From the Pabst sign, you can see Lake Michigan.

On the ground level, there are many unique textures. Many of the buildings feature a beautiful, rough cream brick. The Bottling Building facade has many openings, which creates a larger rough texture caused by the recesses. Another feature which is the result of stress on the building is the nets which are put in place to catch any falling material off the face of the building. These nets add another element of texture and create a sense of caution for passerby. The ground cover around the Bottling Building is a mixture of gravel and cement pavement.

The building directly south of the Bottling Building is a single story structure. This allows light to reach the whole southern side of the building. There are a lot of windows on the south, east and west sides of the building, letting in a large amount of light. The northern side of the building faces the Best Place (Pabst's office) and used to face another building in the northwest corner of the block. The architect did not place many windows on the north side because they would not receive much sunlight anyway.

There is a lack of vegetation in the whole Pabst complex. There are a few bioswales in front of the hotel (Brew House). The bioswales would be a great element to carry throughout the whole complex. The only other vegetation on the site was weeds which were growing through the cracks in the sidewalk and alongside the building facade.

There is also a lack of water present on the site. Being that the site is in an industrial area of town, this is not surprising.

As previously mentioned, Pabst Brewery sits atop Chestnut Hill. This is one of the highest points in the city. This leaves the complex open to a fair amount of strong winds. The cold air comes off Lake Michigan and is pushed inwards toward the city. The wind can ba a problem, but can also be turned into an asset for wind power.

The wind and other factors contribute to the distress found on the Bottling Building, built in 1891, has seen a lot of stress throughout its lifetime. The building had been left to deteriorate since 1996 until 2006. From 2006 until now, not much has been done to the building besides adding the nets to keep debris from falling on pedestrians and cars. Some streets in the complex have been ripped up and re-laid, but many streets have not been fixed since 1996.

Quantative

The soil in Milwaukee is a clay soil and the depth to bedrock is over 100 feet. The only excavation that will be done for this project would be superficial landscaping. The planned landscaping is around the perimeter of the building and also the northwest corner of the block.

Storm water management is important on the complex because of the slope on the site. The design will use bioswales to capture and contain the water on site. The water will flow from northwest to southeast based on the slope.

The building is already integrated into the steam system of Milwaukee. The steam will help heat the building in the cold winter months. All the utilities have been updated since the brewery's last day of operation was in December of 1996. There are a few hints of old utilities including a fire hydrant and mailbox.

The site is surrounded by streets on all sides. North 10th and North 9th street are not high traffic streets. They are primarily used to get from the middle of the complex to West Winnebago or West Highland. West Highland Avenue is on the south side of the Bottling Building. It runs east to west from the west side of the river downtown, over Highway 43. West Winnebago is the busiest street running along the north end of the complex. West Juneau Avenue used to be a busy street, but now it is mainly the entrance into the complex.

Figure 4.1

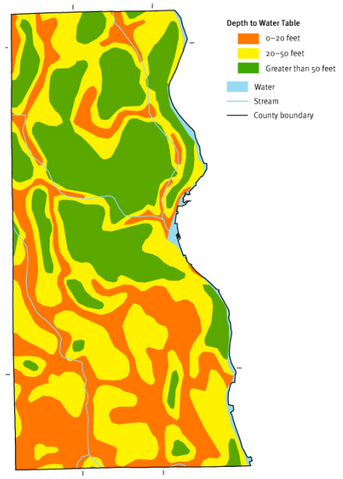


Figure 4.2

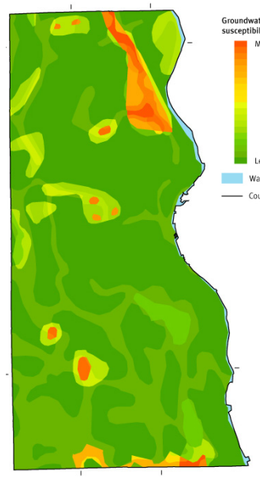


Figure 4.3

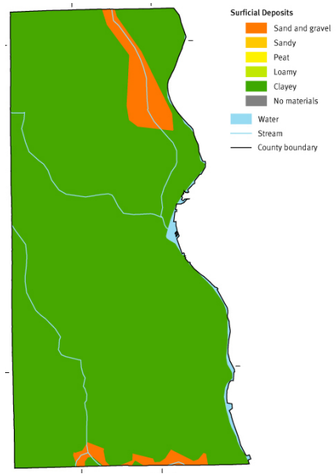


Figure 4.4

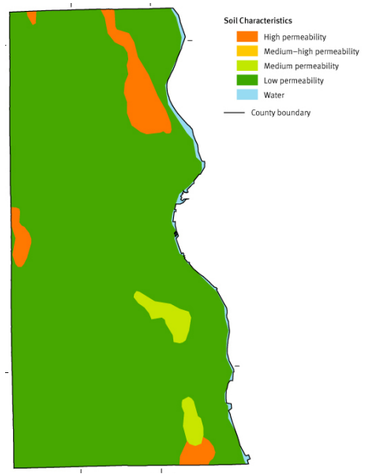


Figure 4.5

Figure 4.6

Figure 4.7

There is very limited pedestrian traffic except for the tours put on by the Best Place. There are not any retail places, only offices and the hotel currently in the area.

The brewery is at one of the highest points in Milwaukee. From the west side of the building to the east side, there is approximately a 10 foot decrease in elevation.

There is not much to the site. On the 1100th block of North 10th Street there are only two buildings. The largest and smallest of the complex. The Bottling Building taking up over two-thirds of the block on the south spans from the east to the west. On the north east corner of the block stands the Best Place. The Best Place was the headquarters of the Pabst Brewery for many years. Ongoing preservation is being done to the building to turn it into a tourist destination and event center. The north west corner of the block is a gravel lot that is often used for parking. A building once stood here, but is no more.

The zoning codes for the Pabst Brewery are currently manufacturing. They zoning is in the process of being changed for the block the Bottling Building is on.

1 Figure 4.8

2 Figure 4.9

3 Figure 4.10

5 Figure 4.12

6 Figure 1.10

4 Figure 4.11

7 Figure 4.9

8 Figure 1.5

9 Figure 4.13

10 Figure 4.14

11 Figure 1.4

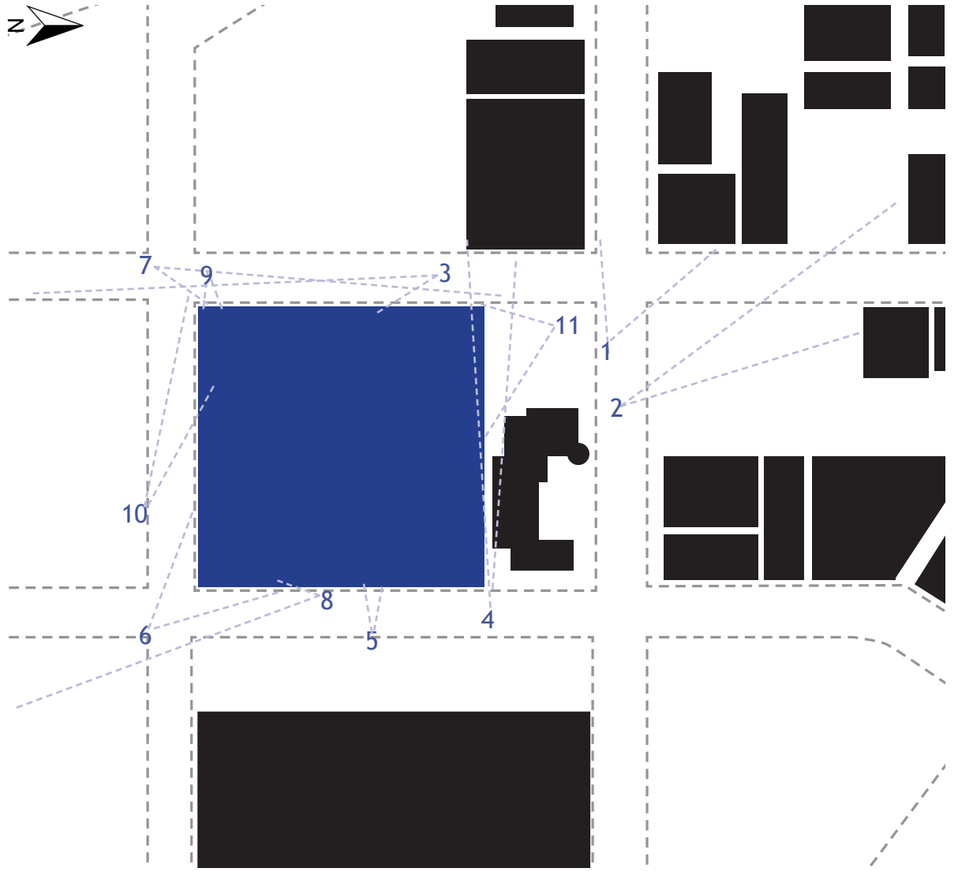


Figure 4.15

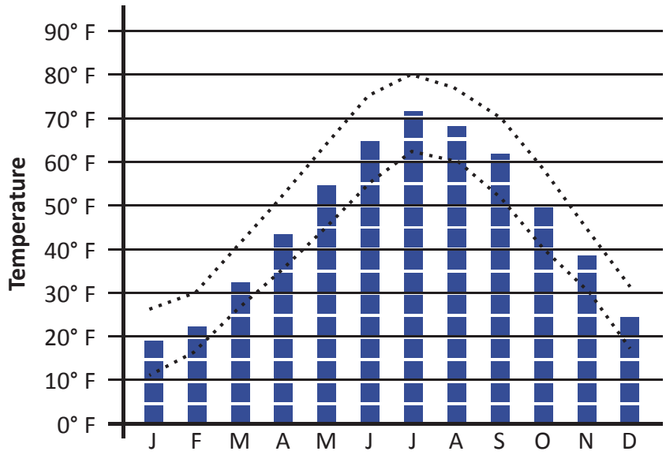


Figure 4.16

The graph (left) illustrates the monthly average temperature in Milwaukee. It also depicts the average high temperature and low temperature for each month.

The highest recorded temperature between the years 1870 and 2012 was a temperature of 105° F in 1934. The lowest recorded temperature between 1870 and 2012 was a temperature of -26° F in 1982 and again in 1996.

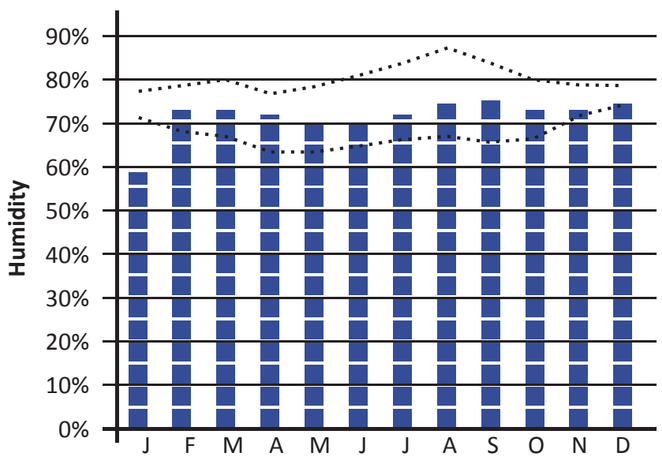


Figure 4.17

The graph (left) illustrates the monthly average percent humidity in Milwaukee. It also depicts the average morning humidity levels (top line) and the average afternoon humidity levels (bottom line) for each month of the year.

The graph (right) illustrates the monthly average inches of precipitation (blue) and average snowfall (small dark blue squares) in Milwaukee.

The most recorded precipitation in one month between the years 1927 and 2001 was 9.98 inches in June 1997. The least recorded precipitation between the years 1927 and 2001 was in September 1979 with a mere .02 inches the whole month.

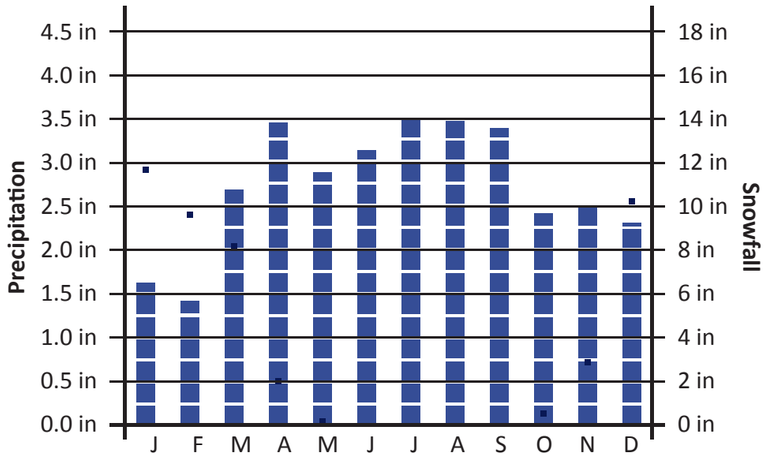


Figure 4.18

Clear days are total days in a year when clouds cover up to 30% of the sky during daylight hours. There were 90 clear days in Milwaukee in 2012.

Partly cloudy days have cloud covering from 40% to 70% of the sky during the daytime. There were 100 partly cloudy days in 2012.

The rest of the days in 2012 were mainly overcast, with at least 80% cloud cover.

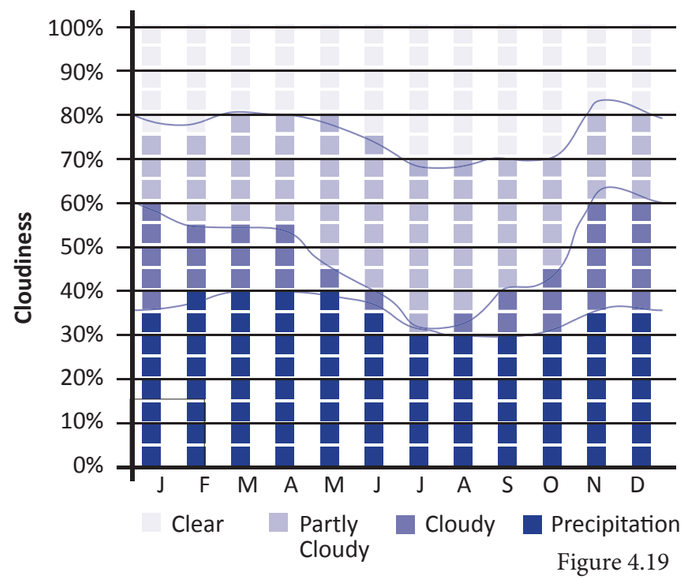


Figure 4.19

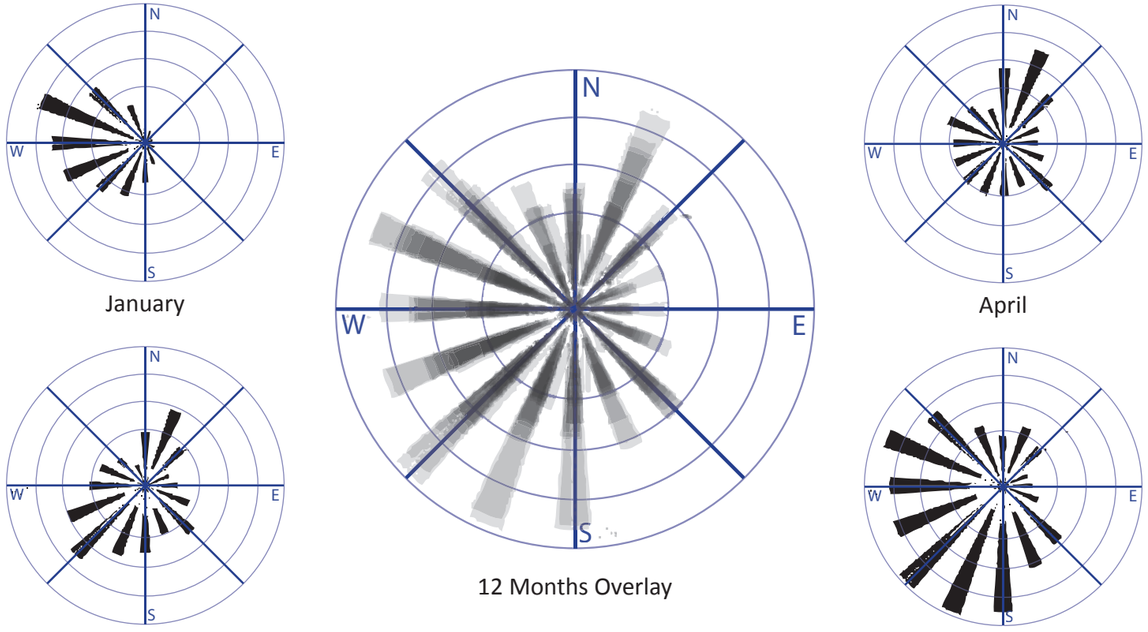


Figure 4.20

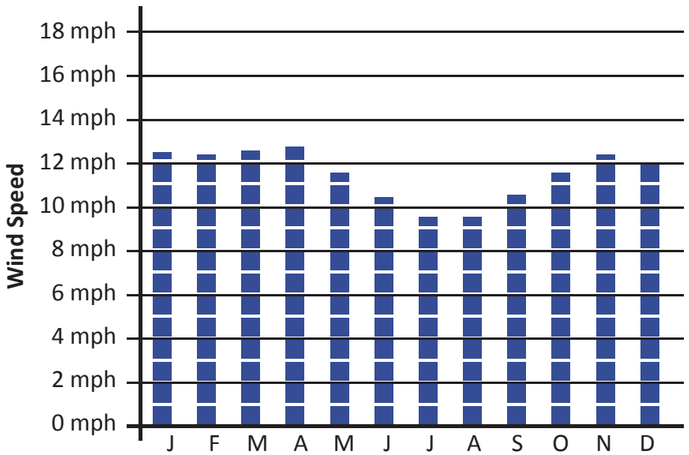


Figure 4.21

The annual wind speed in Milwaukee is 11.4 miles per hour. The prevailing winds come from the west-north-west and are typically 10.9 miles per hour. The percent of calm, no wind, during the year averages around 2.2 percent. The peak gust was recorded at 81 miles per hour from the north-west in July 1984.

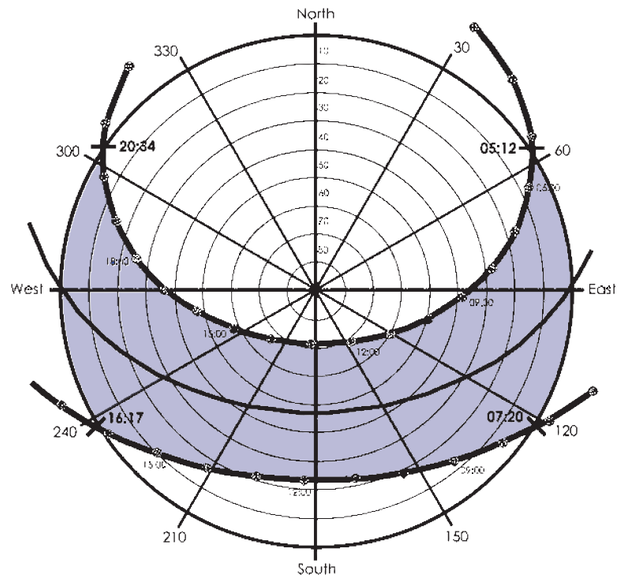


Figure 4.22

Figure 4.23

Figure 4.24

The Bottling Building in the Pabst Brewery receives a lot of sunlight, as seen above in the photograph looking east to the bay. This provides the opportunity for natural solar gain in the winter and energy through solar panels all year.

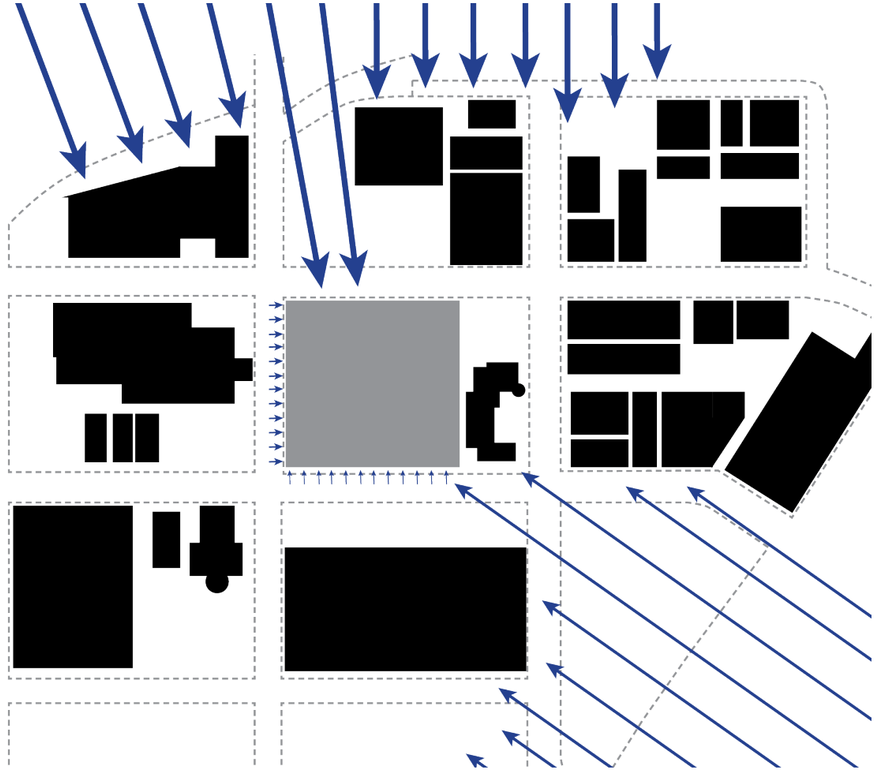


Figure 4.25

Since the Pabst Brewery isn't in operation as this facility anymore, the noise levels are reduced from what they were. As seen in the photo on the left, the Pabst Brewery Complex is adjacent to Highway 43 to the west. To the south, the complex is adjacent to a moderately busy street, West Highland Avenue.

The transportation thoroughfares create a large amount of noise pollution. This is a positive and a negative aspect of the site. It is a negative because it is noise pollution, and many people do not enjoy the honking of horns throughout the day. But during the non-rush-hour driving times, West Highland Avenue and Highway 43 don't produce as much noise.

Final Proposal

Residential	**95000 sq ft**
Public	**40000 sq ft**
Lobby	500 sq ft
Interior Courtyard	3500 sq ft
Private	**55000 sq ft**
Studio	650 sq ft each
One Bedroom	850 sq ft each
Two Bedroom	1250 sq ft each
Three Bedroom	1750 sq ft each
Retail	**127000 sq ft**
Public	**117000 sq ft**
Grocery	15000 sq ft
Undetermined Spaces	5000 sq ft
Private	**10000 sq ft**
Shipping and Receiving	5000 sq ft
Storage	5000 sq ft
Miscellaneous	**15000 sq ft**
Service	**10000 sq ft**
Circulation	**5000 sq ft**
	237,000

Figure 4.26

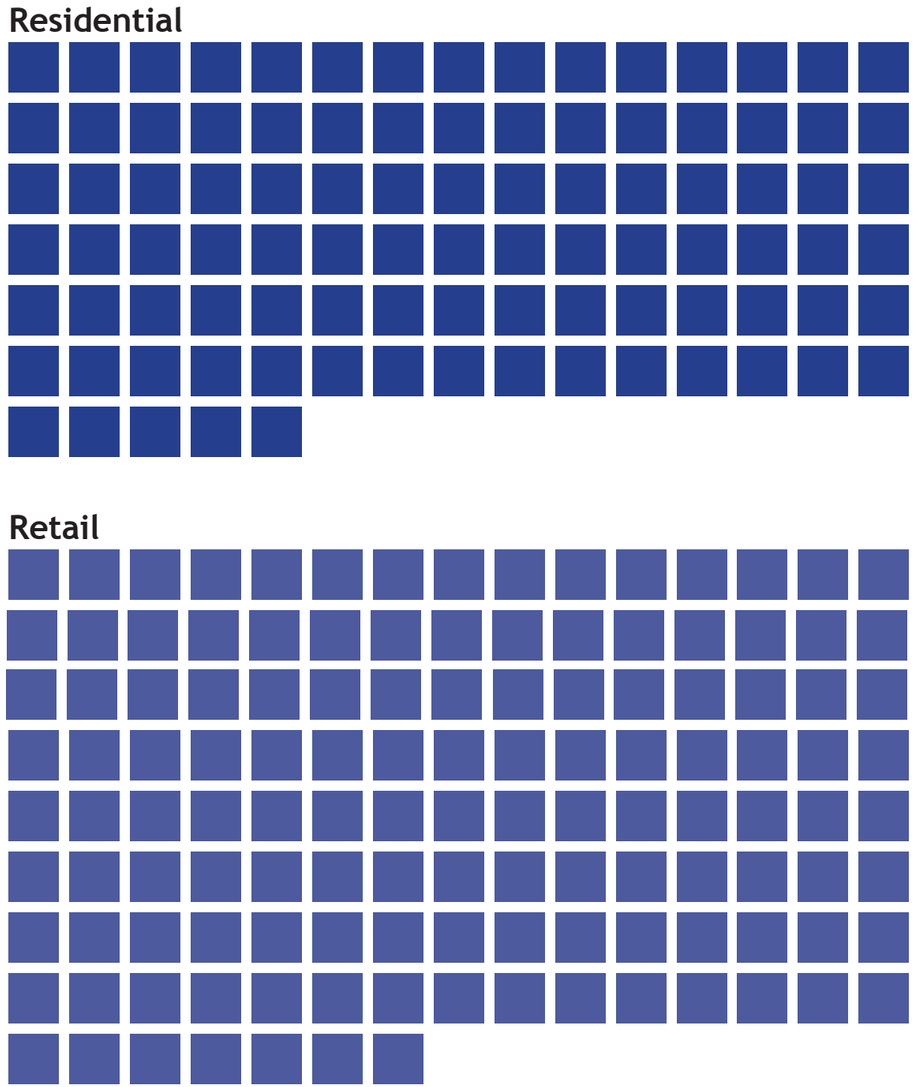


Figure 4.27

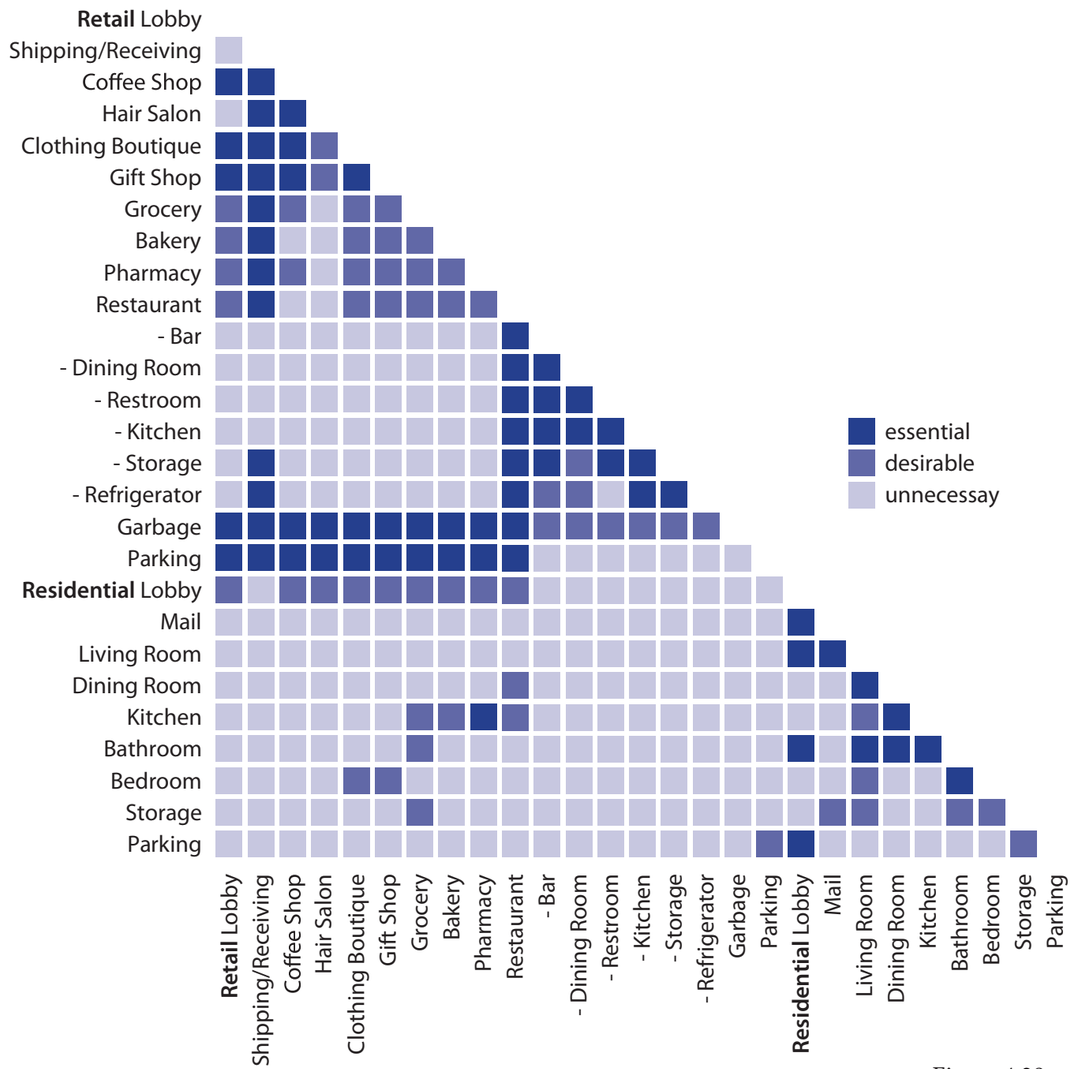


Figure 4.28

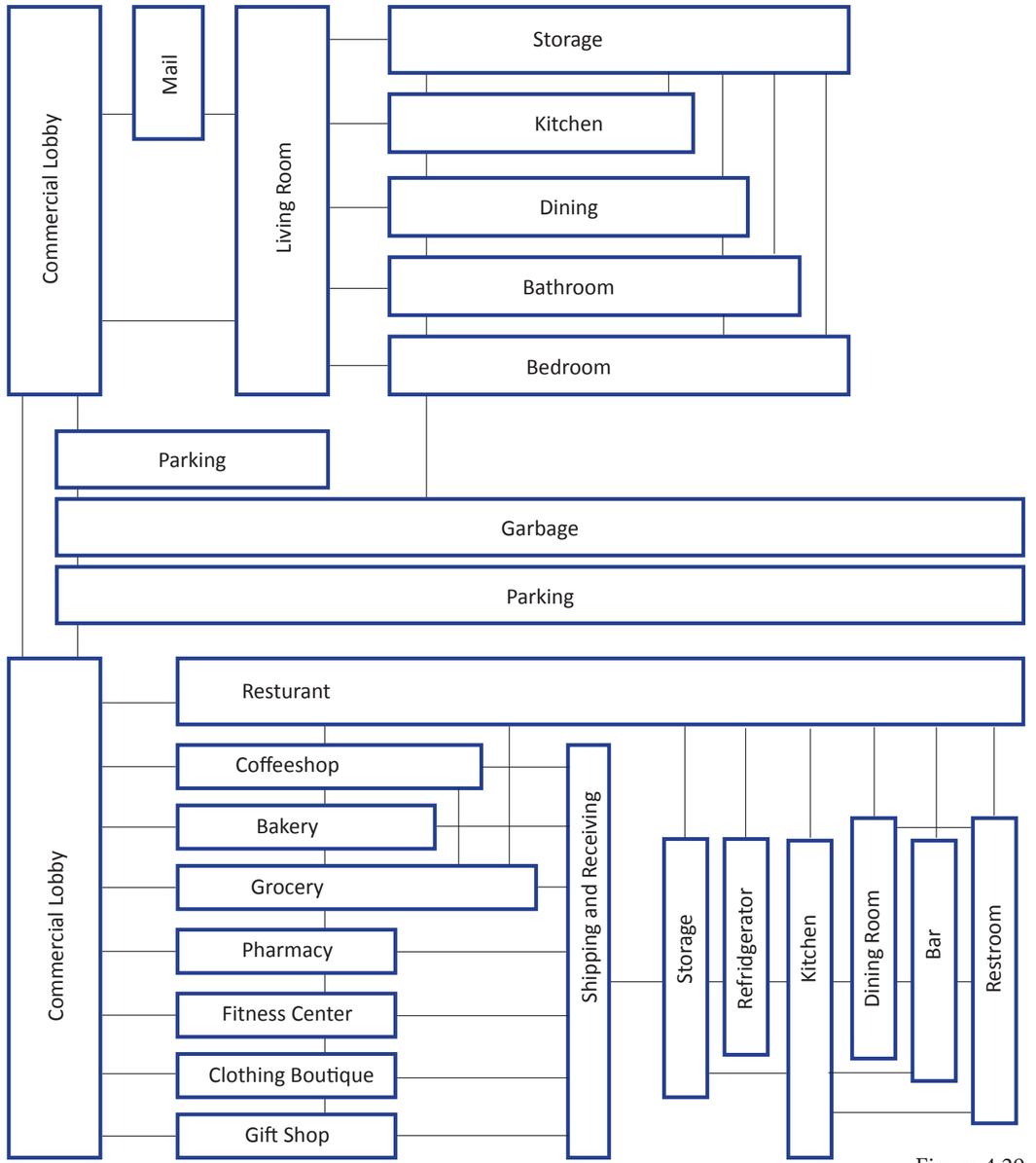
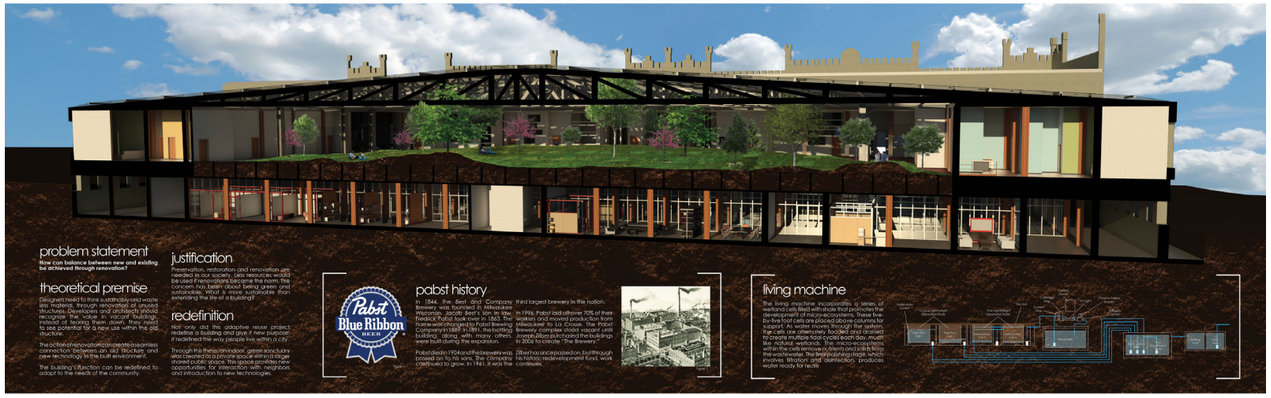


Figure 4.29

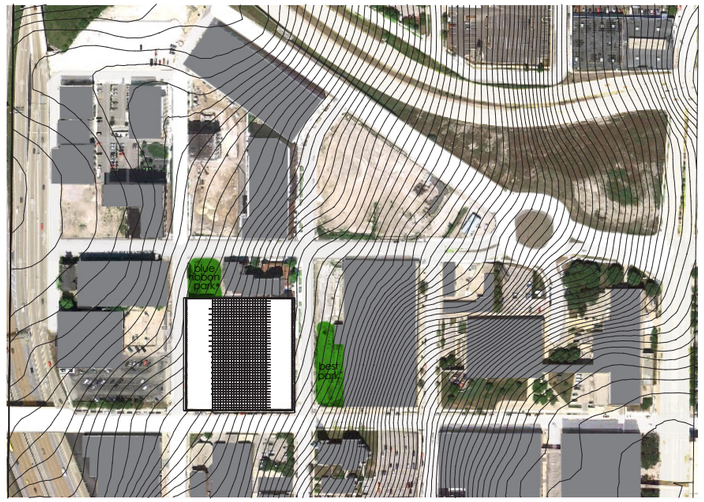
Final Design



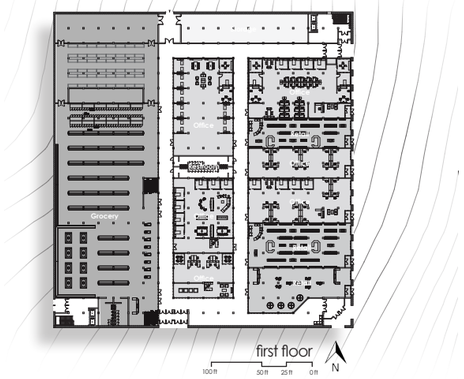
0.2 miles Milwaukee Area Technical College
0.3 miles Aurora Sinai Medical Center
0.5 miles Marquette University
0.6 miles Hudson River
0.7 miles King Park
1.1 miles Pabst Theater
1.2 miles Pabst Mansion
1.4 miles Carver Park
1.9 miles Milwaukee Art Museum
2.0 miles Milwaukee Bay
2.5 miles Henry Maier Festival Park
3.4 miles North Point Light House
3.8 miles McKinley Marina

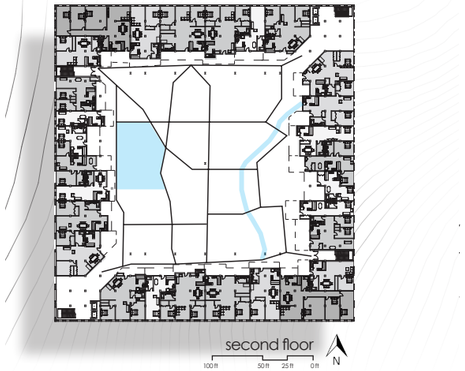
Half mile radius:
2 universities
3 apartments
2 parks
0 coffee shops
0 grocery stores
1 restaurant
1 retail store

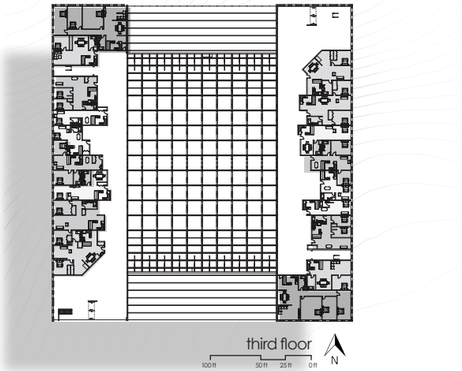
One mile radius:
4 universities
30 apartments
9 parks
15 coffee shops
5 grocery stores
48 restaurants
22 retail stores



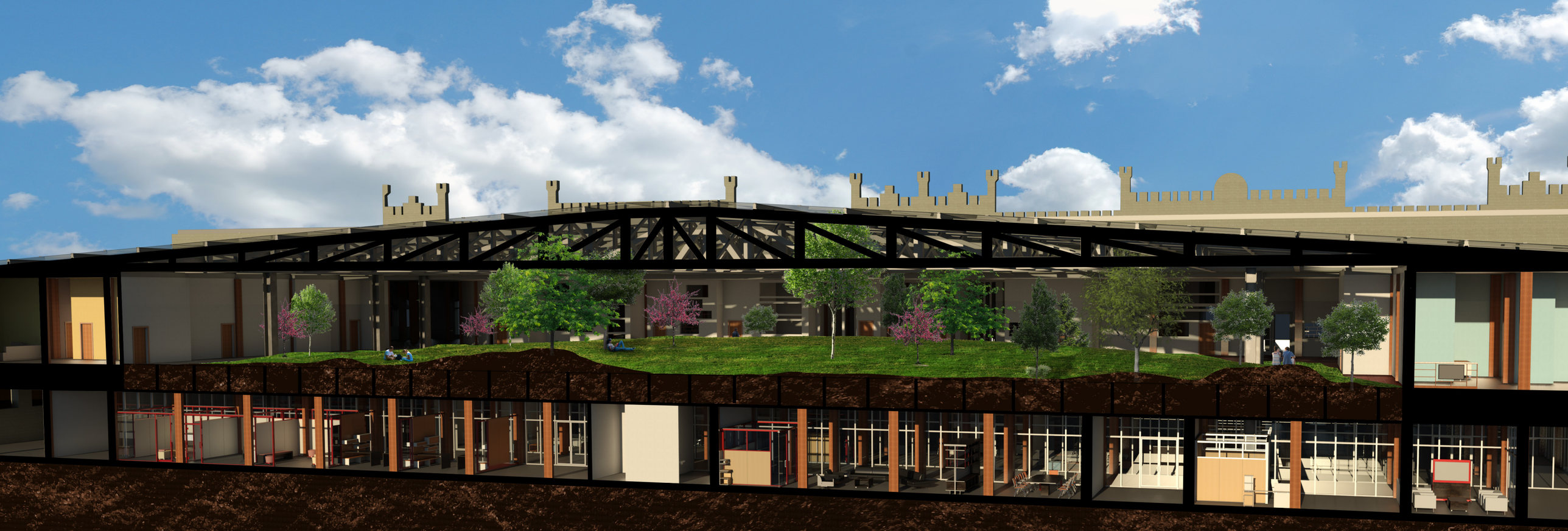
site map
0'-1" = 150'-0"

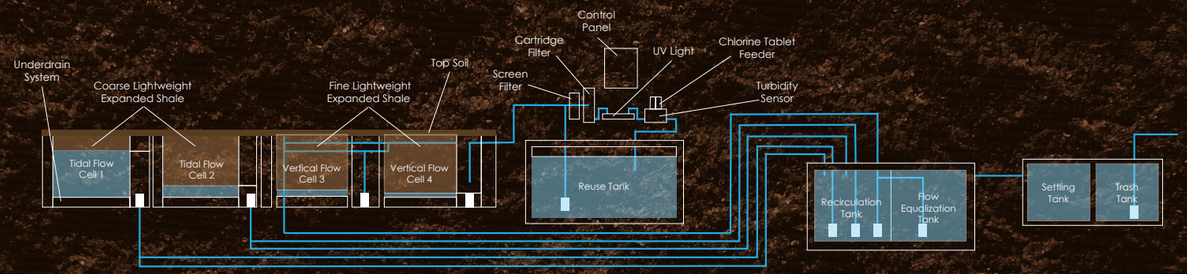

Grocery
first floor
100 ft 50 ft 25 ft 0 ft
N


second floor
100 ft 50 ft 25 ft 0 ft
N

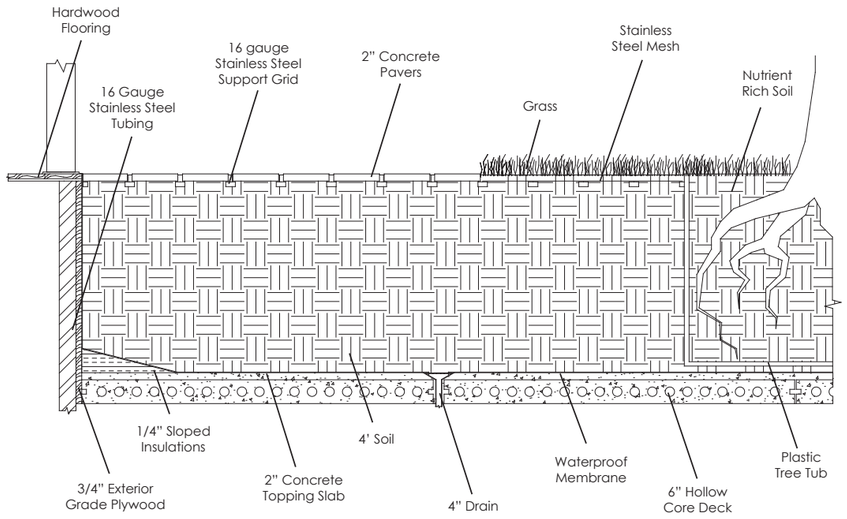

third floor
100 ft 50 ft 25 ft 0 ft
N

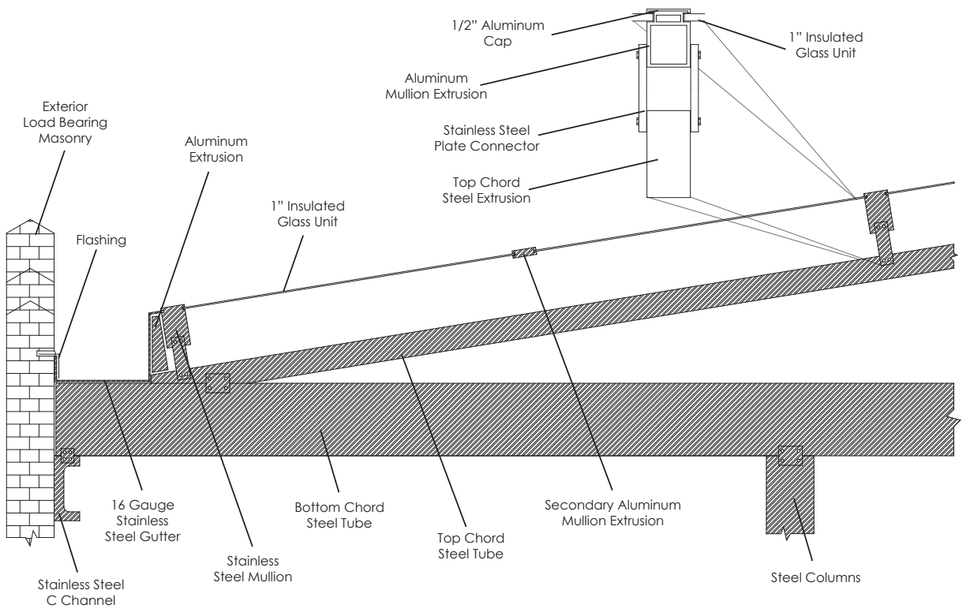

ARCHITECTURAL GRAPHICS
DELIRIOUS NEW YORK
DELIRIOUS NEW ORLEANS





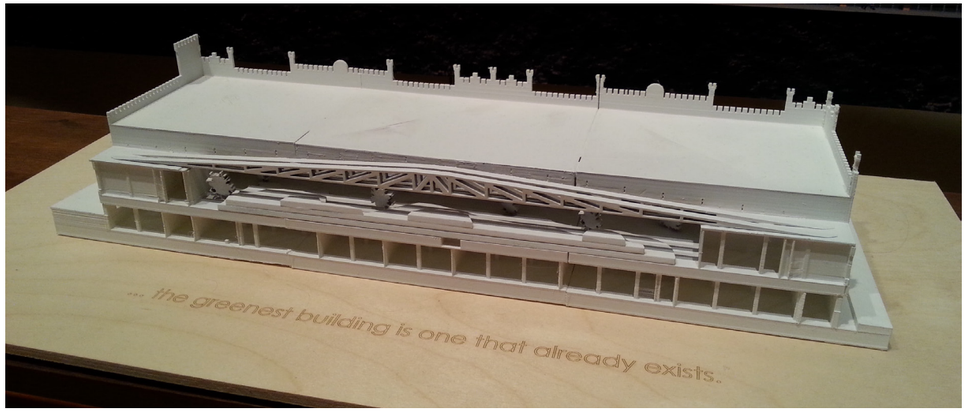
The living machine incorporates a series of wetland cells filled with shale that promotes the development of micro-ecosystems. These five-by-five foot cells are placed above columns for support. As water moves through the system, the cells are alternately flooded and drained to create multiple tidal cycles each day, much like natural wetlands. The micro-ecosystems within the cells remove nutrients and solids from the wastewater. The final polishing stage, which involves filtration and disinfection, produces water ready for reuse

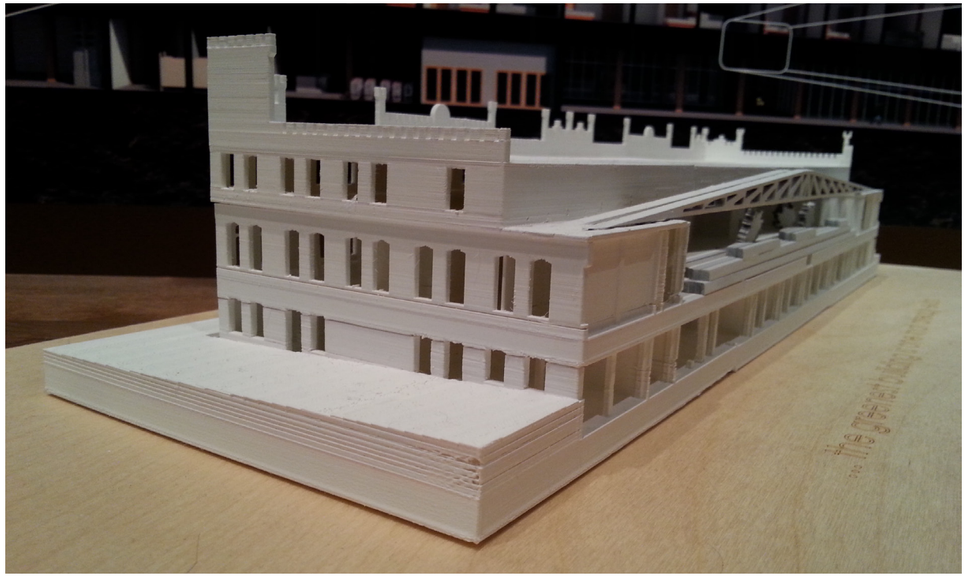

Hardwood Flooring
16 Gauge Stainless Steel Tubing
16 gauge Stainless Steel Support Grid
2" Concrete Pavers
Grass
Stainless Steel Mesh
Nutrient Rich Soil
1/4" Sloped Insulations
4' Soil
3/4" Exterior Grade Plywood
2" Concrete Topping Slab
4" Drain
Waterproof Membrane
6" Hollow Core Deck
Plastic Tree Tub


1/2" Aluminum Cap
1" Insulated Glass Unit
Aluminum Mullion Extrusion
Stainless Steel Plate Connector
Top Chord Steel Extrusion
Exterior Load Bearing Masonry
Aluminum Extrusion
1" Insulated Glass Unit
Flashing
16 Gauge Stainless Steel Gutter
Stainless Steel C Channel
Stainless Steel Mullion
Bottom Chord Steel Tube
Top Chord Steel Tube
Secondary Aluminum Mullion Extrusion
Steel Columns

Installation

3D Printed Model





References

Brewery, T. (2013). About:the brewery. Retrieved from www.thebrewerymke.com/about/index.htm

Brewery, T. (2007). Block 3 plan. Retrieved from http://www.thebrewerymke.com/siteplans/fpblock3/index.htm

Clark, R. H., & Pause, M. (2012). Precedents in architecture: analytic diagrams, formative ideas, and partis (4th ed.). Hoboken, N.J.: John Wiley & Sons.

Henehan, D., & Woodson, R. D. (2004). Building change-of-use: renovating, adapting, and altering commercial, institutional, and industrial properties. New York: McGraw-Hill.

Huxtable, A. L. (1970). Will they ever finish Bruckner Boulevard?. New York: Macmillan.

Langenbach, R., & Bunnell, G. (1978). A future from the past: the case for conservation and reuse of old buildings in industrial communities. Washington: U.S. Dept. of Housing and Urban Development

Rabun, J. S., & Kelso, R. M. (2009). Building evaluation for adaptive reuse and preservation. Hoboken, N.J.: Wiley.

Semes, S. W. (2009). The future of the past: a conservation ethic for architecture, urbanism, and historic preservation. New York: W.W. Norton & Co..

Sifferlin, A. (2012, Jan 27). Leed from behind: Why we should focus on greening existing buildings. *TIME: Science and Space.* Retrieved from http://science.time.com/2012/01/27/leed-from-behind-why-we-should-focus-on-greening-existing-buildings/

Personal Information

Figure 5.1

114 1st Ave West
West Fargo, ND 58078

507.317.1895

brittany.taplin@gmail.com

"I see adaptive reuse becoming the norm in the near future. Every old building has potential to become something new."